



**Annual Report**  
of  
**Research and Experimental  
Work**

of the  
**Department of Agriculture**

**H.E.H. the Nizam's Government**

for the year

**1345—1346 Fasli**

(1936—1937 A.D.)

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**HYDERABAD-DECCAN  
GOVERNMENT CENTRAL PRESS  
1939.**





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oil content in large number of castor seeds rapidly, for the Castor Improvement Scheme of the Imperial Council of Agricultural Research.

4. The Entomological Section carried out a preliminary general survey of the incidence of the damage caused to the rice crop by Rice Hispa insect. It has been found that the loss amounted 12 to 15 per cent. of the crop, on the average, though in extreme cases it amounted to about 33 per cent.

5. The Cattle Breeding Farm is trying to improve the cattle of the Malvi and Krishna Valley breeds, for draught purposes without unnecessarily sacrificing the milk yielding capacity. Some definite improvement has taken place in the milk yield of both the breeds, more in Krishna Valley than in Malvi.

6. At the Poultry Farm, of the various breeds which are under trial, the White Leghorn and Australorp breeds proved to be the best this year.

7. The trials conducted by the Horticultural Section have shown that the oval and round varieties of sapodilla, Bhokri variety of grape, the Singapur Queen variety of pine-apple, the maisaram variety of fig, the Gujerat and Hawaiian varieties of papaya, the Basrai, red and Soni varieties of banana, the Californian variety of grape-fruit and the Allahabad Sufeda variety of guava can successfully be grown in the State. The North India Dasavari variety of betel-vine has given promising results.

8. Some of the experiments in progress at the Experimental Farms in the West Telingana Division have given definite results, which are mentioned in the following:—

(a) The manurial experiments with rice have again shown that the chief element required for producing a successful crop is Nitrogen, and that Nicifos is on the whole better than a combination of Ammonium Sulphate and Superphosphate.

(b) The manurial experiment with rice to find out the optimum Nitrogen:Phosphoric Acid ratio has again shown that 1:1 ratio is the best.

(c) The rotation experiment with rice in both the seasons, as against rice in Kharif and other Rabi crops in Rabi, has again shown garlic as a profitable substitute for rice in Rabi.

(d) The planting time experiment with sugarcane Coimbatore No. 213 has shown that November to January is the proper time for planting to obtain highest outturn from the crop.

(e) The planting time experiment with Rabi groundnut has indicated December as the most suitable time for obtaining highest outturn.

(f) The experiment with method of planting sugarcane has shown that it is possible to produce a satisfactory crop by planting on flat land, if planting in trenches cannot be arranged.

(g) A number of experiments are in progress to find out the most suitable varieties of different crops. The varieties which have given promising results are shown in the following table:—

<i>Crop</i>	<i>Promising varieties</i>
Sugarcane ..	Co. 213, 419, 511, 426, 434 and 509.
Groundnut (Kharif).	Spanish No. 5 and No. 9.
Groundnut (Rabi) ..	Kanke No. 17.
Cotton ..	Gaorani No. 12 and No. 58 E.
Jowar (Kharif) ..	Cawnpore Dodania and Aishpuri.
Jowar (Rabi) ..	Maldandi.
Tur ..	Pusa E. and Coimbatore Red.
Rice ..	Himayatsagar No. 263 and No. 504.
Gram ..	Local and Bengal.
Bajra ..	African Giant and Akola.
Wheat (irrigated) ..	A.O. 13 and A.O. 85 of Nagpur.
Linseed ..	Pusa H.68 and Local.
Tobacco ..	Pusa 177 and Guntur broad leaf.

(h) The experiments with various irrigated crops on deep Regur soil, which has been resigned by the cultivators on the excuse that it is unfit for irrigation, were continued. Sugarcane, rice, turmeric, linseed and onions gave promising results.

9. Some of the experiments in progress at the Parbhani Experimental Farm of the Godavari Division have given definite results, which are mentioned below:—

(a) The results of the green manuring experiment with wheat have been in favour of green manure.

(b) The seed rate experiment with groundnut has again shown that 60 lbs. of seed per acre is the best.

(c) A number of experiments are in progress to find out the most suitable varieties of different crops. The varieties which have given promising results are shown in the following table:—

<i>Crop</i>	<i>Promising varieties</i>
Cotton (long staple) .	Gaorani No. 4 and No. 6.
Cotton (short staple). .	Havri No. 3.
Sugarcane . .	Co. 290 and E. K. 28.
Groundnut . .	Kanke No. 17 and Akola No. 10.
Jowar (Rabi) . .	Hyderabad No. 47.
Linseed . .	Local.
Gram . .	Local.
Wheat . .	Aurangabad No. 460-B. 1.
Tur . .	Pusa 15.
Mung . .	Pusa 18.

10. Some of the experiments started at the Raichur Experimental Farm of the Karnatik Division have given definite indications, which are mentioned below:—

(a) The spacing experiment with Jayawant cotton has indicated 18 inches by 18 inches as the most suitable distance between the plants.

(b) A number of experiments were started to find out the most suitable varieties of different crops. The

varieties which have given promising results are shown in the following table:—

<i>Crop</i>	<i>Promising varieties</i>
Cotton (Rabi) ..	Raichur-Kumpta Nos. 15 and 4.
Groundnut ..	Hebbal No. 1.
Bajra ..	Cawnpore Awne.
Tur ..	Coimbatore.
Wheat ..	Local.
Gram ..	Local.

11. The Administration Report of the Agricultural Department is published separately. Those interested in the activities of the department in general are advised to refer to the same.

(Sd.) NIZAMUDDIN HYDER,  
DIRECTOR OF AGRICULTURE,  
*H.E.H. the Nizam's Dominions.*





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*Annual Report of the Economic Botanist to His Exalted  
Highness the Nizam's Government, for the year  
1345-46 Fashl.*

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ADMINISTRATION.

The undersigned was in charge of all the activities of the Economic Botanist's Section during the period under report, and took casual leave for 5 days and privilege leave for 28 days from Dai 29—Behman 27, 1346 F., both days inclusive. The rest of the staff remained as in the last year. The Economic Botanist was on tour for 67 days. During the period of his privilege leave, Mr. S. N. Nanjundaiyah, Assistant Economic Botanist, Parbhani, acted for him. Mr. Nanjundaiyah was on a month's privilege leave during the year under review. Mr. C. A. Gideon, Assistant Superintendent for jowars, took privilege leave for 3 months and 10 days. Mr. S. M. Raza Kazmi, Assistant Botanical Superintendent for castor, availed of one month and 24 days of privilege leave. Mr. T. K. Venkatkrishnan, Entomological Assistant, took privilege leave for 2 months and 5 days.

1. *General*.—The Economic Botanist is responsible at present for the improvement of the yields of five different crops, namely, castor, rice, *kharif* jowar, *rabi* jowar and wheat. Castor and rice are being improved at the Main Agricultural Experiment Station, Himayat-sagar, and *kharif* and *rabi* jowars and wheat at the Main Agricultural Experiment Station, Parbhani. The main problem in all these crops is to isolate and establish strains, which would yield much more seed per acre than that produced by the local kind raised by the *raiya*t.

2. *Castor Improvement*.—This activity is being managed under the name of the All-India Castor Improvement Scheme conjointly financed by our Government and the Imperial Council of Agricultural Research. A detailed report is, therefore, separately submitted every year on castor improvement. A brief summary of

the work done during the period under review is given below:

(1) The staff continued to be the same as in the past year, consisting of two Technical Assistants and five Plant-Collectors provided by the Council and one Assistant Botanical Superintendent and one Senior Kamgar by the State. As the crop advanced with the season and the work increased, the Plant-Collector staff was expanded by appointing temporary Plant-Collectors or Kamgars, who were dropped as the pressure of work decreased.

(2) The work consisted of the following items:

- (a) Preliminary Yield Tests,
- (b) Individual Plant Studies,
- (c) The Genetics of Castor,
- and (d) Preliminary Yield Tests in the Districts.

(a) *Three Preliminary Yield Tests* were run after Fisher's Method of Randomized Blocks in the "chalka" or light sandy soil at Himayet Sagar. Test 1 consisted of 17 single-plant cultures, which had been retained out of the 33 tried out a year ago. 11 of them are promising and further study on them will continue. These are Nos. 809, 848, 854, 866, 952, 973, M 142, M 156, M 172, W 97 and W 115.

Test 2 contained 12 cultures of which number half were from the Districts. All the 12 proved significantly better than the local castor, which was used as the standard in all the three tests.

Test 3 had 9 cultures in it. This group was made up of small seeded material. Further study will continue on the best of them.

(b) *Plant-to-plant Studies* were conducted on the progeny of 297 single-plant cultures and 97 new acquisitions. The former were grouped as under:

- (i) High seed yield and mostly female or pistillate spike—48 cultures,
- (ii) Early flowering—19 cultures,
- (iii) High seed yield and high oil per cent. on the whole seed—24 cultures,
- (iv) High seed yield but spike not mostly female—12 cultures,

- (v) High oil per cent. on the whole seed without regard to the seed yield—33 cultures,
- (vi) High yielding small seeded—36 cultures,
- (vii) High yielding non-spiny—12 cultures,
- and, (viii) High yielding monospiked—5 cultures.

Each of these cultures was studied plant-by-plant for characters like the mode of branching, nature of bloom, plant colour, spines, type of spike, etc. The best plants from the best cultures were self-pollinated and will be carried forward in the next season. These retained cultures were also chemically analyzed for oil content by the Agricultural Chemist at Himayet Sagar.

The 97 newly acquired samples were planted separately and similarly studied in detail. Only 2 have been retained as desirable for further work.

6 *rabi* samples were tried out in the *rabi* season on heavy black soil. They were found to be of little value and were, hence, discarded.

(c) *The Genetics of Castor*.—It is a study in the inheritance of a number of characters of the castor plant, e.g., variations in plant colour, bloom, spines, branching habit, nature of spike, fruit colour, size, etc.

(d) In the Districts an identical preliminary yield test was laid down with the cultures appearing in the Test 2 at Himayatsagar. This work was done on the two Main Agricultural Experiment Stations at Raichur and Warangal and the Government Farms at Sangareddi and Roodroor. Correlating the results, 7 of the 12 cultures were found to be worth retaining for future work. These are 809, 848, 854, M 142, M 156, W 97 and W 115.

(3) *Rice Improvement*.—The rice plots remained the same as in the past years. They comprise a little less than 2 acres in all. They lie between the main road of the farm at Himayet Sagar, running past the Horticultural Section from the south to the north, and, that going in the same direction past the farm stores shed.

(a) *The Abi.*

(i) *The season* was not very favourable on the whole. The total rainfall from Amardad 1345 F. to Dai 1346 F. (June—November 1936), that is, from planting to harvest, was 18.15". The period was a bit dry.

(ii) *Cultural Operations and the Crop.*—Two plots of the dimensions 75'×32' and 75'×30' respectively were used for the nursery. They were given one deep plowing and two discings. Well-rotted farm-compost was spread as evenly as possible at the rate of 1000 lbs. per plot or about 8.2 tons per acre. Proper puddlings were given thereafter.

The seed had been previously mounted on 14"×14" sheets of thin brown paper each carrying 144 seeds glued 1" apart on all sides. The sheets were set down on the puddle and fine tank silt was sprinkled over them. The sowing of the nursery was done from Amardad 14-16, 1345 F., (June 9-11, 1936). Some 17 cultures showed poor germination and had to be resown. *Hispa armigera* or Rice Hispa, the well-known rice pest in the Dominions, was noticed on Amardad 22, 1346 F., (June 27, 1937) and was checked by hand-picking.

The seedlings were transplanted from Shehriwar 1-6, 1346 F., (July 7-12, 1937). They revived within a week. Soon after hispa reappeared and its severity increased due to the rather dry weather that prevailed in July and August. All the known methods of tackling the pest, namely, hand-picking, netting, leaf-nipping and spraying with lead-arsenate—Pysect mixture, were used. The attack persisted until the first week of Aban, (September), whereafter it decreased. The crop receives quite a set-back from this pest every season.

From Mehri 21, 1345 F. (August 27, 1936) flowering commenced and culture No. 267 was found to flower first of all. It belongs to the early maturing group. Among the intermediate maturing cultures No. 543 flowered before the rest on Aban 4, 1345 F., (September 9, 1936) and among the late ones culture No. 24 was the first to flower on Aban 29, 1345 F., (October 4, 1936). As the heads began to develop the rice stem-borer was noticed. It was checked by destruction of the affected plants and by light-traps.

The harvest was begun on Azoor 13, 1346 F., (October 18, 1936) and completed on Dai 21, 1346 F., (November 25, 1936).

(iii) *Experiments.*—*A. Yield Tests.*—This year also as in the past, the rice cultures were put into three groups on the basis of their period of maturity, namely, "early," "intermediate" and "late." The first group comprised cultures flowering before Aban 10 (September 15) and maturing within 90-100 days from the time of sowing; the second consisted of cultures flowering between Aban 11-25 (September 16-30) and ripening within 101-110 days; and the third was made up of cultures flowering between Aban 26 to Azoor 10 (October 1-15) and maturing within 111-130 days. In all 54 "early," 36 "intermediate" and 18 "late" cultures were tested. There were no "very late" cultures this year, that is, those flowering after Azoor 10 (October 15), and ripening after 130 days.

(a) *Early Types.*—A plot, measuring  $131' \times 40'$ , was divided into 3 blocks of equal size, each  $37'6'' \times 32'1''$ . In each block were transplanted 22 "early" single-plant cultures in a randomized manner, in single rows. One of the 22 was No. 263, which was used as the standard. Besides these 22 rows there were planted two border-rows at each of the two borders (north and south) of the plot. These 4 border-rows were discarded at harvest. Cultures No. 4, No. 406 and No. 427 were excluded from the calculations due to their segregating for different types. The distance between rows was  $1\frac{1}{2}'$  and between plants  $7''$ . Each row was  $32' 1''$  long and carried 56 plants. The 4 end-plants at the two ends of each row were discarded at harvest in order to avoid the end-effect. The results were interpreted after Fisher's Method of Analysis of Variance and showed that No. 263 was significantly superior to the rest of the 19 cultures from 1.1 per cent. to 24.9 per cent., culture No. 66 being nearest to it. The results have been tabulated in Statement I.

Another group of 21 "earlies," including the standard No. 263, was similarly tested. The experiment was not statistically significant.

A third group of 12 "earlies" was also tested in the same way in two plots, each  $75' \times 30'$  and divided into three blocks, so as to give six replications in all. Each

block measured 20' 5"  $\times$  16' 11" and carried 12 rows of 36 plants per row. The 12 cultures were sown, randomized in each block. The experiment proved statistically significant and Statement II summarizes the results. Cultures No. 616-4; 624-1; 624-9; 624-13; 624-17; 624-19; 624-23 and 624-24 are good and will be further studied. They are derived from the 31 single-plant selections studied in the previous *abi* and *tabi* seasons, which selections had been originally made from the 12 Marathwada samples of rice, acquired at the Agricultural Demonstration held at the Nanded Grant-in-Aid Farm in the cold season of 1343 F. (1934).

(b) *Intermediate Types*.—This group consisted in all of 36 single-plant cultures divided into two sets of 19 and 17 respectively.

The first set was sown in a plot by itself with the same technique as described above. Interpreted after Fisher's Method of Analysis of Variance, it is seen that the experiment is significant. The results are summarized in Statement III. None of the cultures tested has proved significantly superior to the standard No. 541.

The second batch of 17 "intermediates" was similarly tested and interpreted with No. 541 as the standard. The experiment proved statistically significant and the results have been summarized in the attached Statement IV. We find that cultures No. 82; No. 194 and No. 198 are statistically better yielders than the standard 541.

Two more yield tests after Fisher's Method of Randomized Blocks were run with 15 of the more promising of the 36 cultures in two sets of 8 and 7 respectively. Statements V and VI summarize the results. We see from the former, that, although the experiment as a whole was not statistically significant, the difference between the means of No. 410 and the standard No. 541 very nearly approaches the critical difference. We also see that the same difference between No. 282 and No. 541 actually greatly exceeds the critical difference of the experiment. We may, therefore, be justified in risking the statement that these two cultures *are* promising.

From Statement VI we find that the experiment is statistically significant but none of the cultures tried out are superior to the standard No. 541. However, cultures No. 134 and No. 200 approach the critical mark.

(c) *Late Types*.—17 late maturing single-plant cultures were tried out with the same technique as described above against K 42, which was used as the standard. Three replications were used. The results have been summarized in Statement VII. The experiment has not proved statistically significant. There was much damage done to some cultures, particularly to No. 127, which has consequently been omitted from the calculations. However, comparing the differences in the mean yields of the cultures No. 1, No. 6, No. 18, No. 21, No. 24, No. 28, No. 37, No. 114, No. 266, No. 359 and No. 422 and the control or standard K 42, we find that they exceed the critical difference. These are good cultures and will be tried out again next year.

7 of the more promising of the 17 late maturing cultures, mentioned in the preceding para, were tested against K 42 as the standard in  $8 \times 4$  Fisher's Randomized Blocks. K 42 is a high-yielding, late and fairly fine grained Kolumba strain obtained in previous years from the Bombay Department of Agriculture. We see from the attached Statement VIII that the experiment has not proved statistically significant. Nevertheless, culture No. 37 is 22 per cent. and No. 266, 32.8 per cent. superior in the yield of grain to the standard K 42.

#### B. *Plant-to-Plant Studies*.

A plant-to-plant study was made with the progeny of 48 individual plants, selected in the preceding *abi* and *tabi* seasons for their good grain yield and other desirable habits. Self-pollinated seed was used throughout. Detailed observations were made and recorded for each of the 48 selections. Roguing was done, where necessary. Table I appended hereto shows, that, 14 of the 48 cultures are fine and late maturing, the period of maturity ranging from 123 to 153 days. Their per plant yield of grain (paddy) is from 11.5 to 32.4 gms. Culture No. 670-10 is the highest yielding. 9 cultures are medium grained with a period of maturity of from 109 to 145 days, the yield ranging from 14.7 to 31.7 gms. per plant. Culture No. 638-20 has the highest yield. The remaining 25 cultures are coarse grained. Their period of maturity varies from 121 to 147 days and per plant yield from 15.8 to 36.8 gms. The highest yielding culture is No. 679-17. One culture, namely, No. 681-12 is very



coarse grained and 9 cultures, namely, Nos. 656-7, 659-17, 659-27, 664-6, 665-5, 665-21, 667-6, 667-12 and 667-13 are round grained. Further work will be continued on all these cultures in the next crop year.

21 new single-plant selections were made from two of the older cultures Nos. 2 and 207, which had been found to be heterozygous for awn colour and length. All these selections are high yielding and fine grained. Their yields of grain per plant ranging from 41.00—69.00 gms. Table II gives some of their important characters.

### C. *New Acquisitions.*

38 fresh samples of rice were acquired in the year under report. 28 of these were obtained through the courtesy of the Deputy-Director of Agriculture, East Telingana Division. They are samples of the Madras selection G. E. B. 24, a late maturing rice, which has been spreading widely in the Warangal District. The demand from this District is for rices that take 180-200 days to mature. The collection has been made to study the various samples individually in order to evolve a slow maturing, high yielding, good table rice. Of the remaining 10, one is a selection from the Agricultural Research Institute, Pusa, called T 18, obtained by courtesy of the Deputy Director of Agriculture, West Telingana Division, from his varietal test material and the rest are from the District Mahboobnagar. One of the Mahboobnagar samples is the well-known Sholipoor rice.

All these new acquisitions were separately planted and intensively studied. 506 individual plants were selected in the field and self-pollinated. But on the basis of study in the laboratory only 104 of these have been retained as the best of them. Of these 22 are early ripening, and, hence, have been studied in the *tabi* season as well. The rest will be grown in the coming year. Table III gives some of the important characters of these single-plant selections. It is evident from the table that 2 of the 104 are scented and fine grained; 20 are fine but not scented, whereas the remaining are all not scented and not fine. To be more specific there are in this lot 22 fine, 73 medium, 2 round and 7 coarse grained individuals. Their per plant grain yield varies from 28.00 to 69.00 gms. The highest yielder is No. 690-32 and the lowest are Nos. 691-15 and 31. The last two, incidentally, are from a "pichodi" rice obtained from Medak.

(b) *The Tabi*. (i) The season extended from Dai 4, 1346 F. (November 8, 1936) to Khurdad 26, 1346 F. (April 30, 1937) both inclusive and was quite favourable, but for the rain storms in the month of Khoordad at about harvest time. A good deal of lodging of plants and shedding of grains occurred and harvest operations were interfered with. A total fall of 11.93" was received during the period.

(ii) *Cultural Operations*.—The nursery was prepared in the same manner as that for the *abi* and farm-compost was given to it at the rate of 8.1 tons per acre.

The seed was sown on Dai 29, 1346 F. (December 3, 1936) and there was complete germination by Behman 9, 1346 F. (December 12, 1936).

Transplanting of the seedlings was done from Isfandar 8, 1346 F. (January 10, 1937) to Isfandar 10, 1346 F. (January 12, 1937). The plants revived within six days and the gaps were filled, where necessary. Hispa appeared suddenly on Farwardi 14, 1346 F. (February 15, 1937). But the attack was mild and was kept down by means of the usual remedial measures.

The second permanent pest of rice, namely, the stem-borer, also occurred at the time of flowering and continued right through. Light-traps were set up and also hand-picking and burning was done. A total of 3,393 moths were caught and destroyed. 3,696 of these were females. Compared to the previous year the attack was mild.

Flowering began on Farwardi 27, 1346 F. (February 28, 1937). As in the past years the single-plant culture No. 267 was again the first to flower. However, also as in the past years, this culture was not the first to mature. Culture No. 681-18 ripened before all the rest. General harvest and threshing was begun on Khoordad 18, 1346 F. (April 22, 1937). These operations were much interfered with by anti-monsoon showers totalling 4.94". The accompanying storm caused much lodging and shedding. The entire crop was off the field by Khoordad 26, 1346 F. (April 30, 1937) except the late-received and late-sown Amritsari sample (culture No. 720), which was harvested on Amerdad 1, 1346 F. (June 6, 1937).

(iii) *Experiments.*—(A) *Yield Tests.* The *tabi* season of rice is of short duration lasting for about 4 months. Hence, only early flowering and ripening kinds of rice can be raised in it. All our cultures, therefore, with the exception of the new acquisition No. 720, were “earlies.” This seems to be a late maturing culture but it could not be properly judged due to its having been received late from the Punjab and planted late (our culture No. 720). It was acquired through the courtesy of the well-known local (Hyderabad) grain merchants, Messrs. P. Ganeshmull. It is interesting to note that one of the cultures used, viz., No. 699 (Pusa T 18), which was early flowering (91 days from sowing) in the *abi*, took 10 days more to flower in the *tabi*.

In all 57 promising single-plant cultures were tested for grain yield in various groups with No. 263 as the standard in some groups and No. 504 in others.

6 single-plant cultures were tested against No. 263 in three randomized blocks. The experiment did not prove statistically significant.

Another set of 6 single-plant cultures were similarly tested. But here also the experiment failed to show statistical significance.

A third set of 6 single-plant cultures were tested in the same manner. This experiment gave significant results, which are summarized in the appended Statement IX. We see from it that none of the cultures excels the standard No. 263.

A fourth lot of 6 single-plant cultures was similarly compared, and, here also, No. 263 the standard proved superior to the rest. Statement X summarizes the results.

12 more single-plant cultures were tried out against No. 263 in three randomized blocks. The experiment did not prove statistically significant. However, here the mean yield of the standard was only 81.5 per cent. of the general mean. Percentages based on the standard or control showed that 3 cultures were significantly superior in grain yield to No. 263, the difference between their respective means and that of the standard being greater than the critical difference of the experiment. These were No. 481, No. 483 and No. 545 with 34.3,

46.6 and 49.7 per cent. superiority respectively. 8 more cultures excelled the standard by 6.4 to 34.3 per cent., those better by 20 per cent. or more being Nos. 476, 482, 494, 497 and 505. These results are shown in Statement XI.

A further lot of 13 single-plant cultures was compared to the standard No. 263. In this lot were included 8 cultures evolved from the 31 individual plant selections derived from the seven samples of rice collected at Nanded in the year 1343 F. (1934) and mentioned in Table I of my last Annual Report. They are No. 616-4, coarse grained and Nos. 624-1, 624-9, 624-13, 624-17, 624-19, 624-23 and 624-24, all fine grained. Three others in the group, namely, Nos. 678-5, 679-17 and 681-18 originated from the 6 market samples of rice obtained from the Marketing Officer of our Government and shown in Table III of my last report. They are all coarse grained. The remaining two belong to the 32 single-plant selections made from the 45 samples of rice acquired from the various Departments of Agriculture outside our Dominions in the crop-year 1344-45 F. (1935-36) and shown in Table II of my Annual Report for the past year. The experiment has proved significant and the results have been summarized in Statement XII. We see from it that none of the cultures is statistically superior in grain yield to the standard No. 263. But No. 624-9 is almost so with a percentage superiority of 9.8 instead of 10.9 at which point significance would just be indicated. Culture No. 624-23 is only 5 per cent. better than the control or standard.

Another batch of 3 single-plant cultures was similarly compared in three randomized blocks. The results were significant. On a per cent. basis culture No. 678-12 showed itself to be 12.5 per cent. better than the control No. 263. However, the critical difference stood at 21.6 per cent. as shown in Statement XIII.

6 more single-plant cultures were compared in the same way but the standard used was No. 504. Three replications were used. The test has proved significant but none of the cultures is statistically superior to the control No. 504, although on a mere per cent. basis No. 526 is 12.4 per cent. superior and 543, 14.7 per cent. Statement XIV shows these results.

### *B. Plant-to-Plant Studies.*

25 single-plant selections were made from two rices—the one a village sample obtained at the village of Sholipoor, District Mahboobnagar, and, the other a strain from Pusa T 18, mentioned previously in this report. They are both fine grained rices and maturing about the same time—in 139 and 141 days respectively. 13 of the 25 plants selected were from the Sholipoor sample—our No. 689—and 12 from the Pusa strain T 18—our No. 699. The former are all decumbent in habit, whereas the latter are all erect most of the season but lodge at harvest. Table IV gives some of the important characteristics of these fine rice selections. We see from it that the Sholipoor rice has one good quality, which the Pusa type lacks and vice versa. The former is lodging or decumbent, the latter is erect; but the former does not shed its grain at ripening whereas the latter does.

### *C. New Acquisitions.*

There is a great demand for scented and very fine grained rice ("biriani" rice) in the twin cities of Hyderabad and Secunderabad and in the larger towns of the State. A large part of such rice consumed in these centres, especially the twin cities, is imported from outside the Dominions. Such rice fetches a very good price selling at times as high as 2½—2 seers a rupee. The desirability of producing it within our own State is obvious. A seed sample of such rice—Amritsari—was acquired in the *tabi* under report from and through the courtesy of the well-known Hyderabad grain merchants, Messrs. P. Ganeshmull. It was received late, and, hence, got rather a late start in the season—transplanted on Farwardi 17, 1346 F. (February 18, 1937). It grew vigorously, produced profuse tillering and was very uniform and attractive in appearance. However, the daily increasing heat interfered with the process of pollination—the pollen within the flowers seemed to dry up. Yet, sufficient seed was produced to start six lines from it. They are 720-3, 720-11, 720-14, 720-16, 720-33 and 720-37.

### *D. Release of New Improved Strains.*

The following new and old improved strains of rice were under trial in a comparative yield test at the Main

Agricultural Experiment Station at Himayetsagar and the sub-station at Sangareddi:

(i)	No. 80	} New
(ii)	„ 161	
(iii)	„ 242	
(iv)	„ 248	
(v)	„ 263	Old
(vi)	„ 264	New
(vii)	„ 504	Old
(viii)	„ 539	} New
(ix)	„ 541	

In addition to these nine strains, strain No. 127 was also released for a similar test to the Main Agricultural Experiment Station at Warangal. Of these Nos. 80 and 127 are late maturing; Nos. 539 and 541 intermediate in maturity and the rest are all early ripening. All the strains were tested against one another and local rices. At Himayet Sagar and Sangareddi the locals were Tek-sannal and Nizam Gaod and at Warangal Palasannal. At the last place G. E. B. 24, a late maturing strain produced by the Madras Department of Agriculture, was also included in the test. It is a fine-grained, well-tillering, heavy-yielding rice and has spread into Warangal from the neighbouring districts of Madras. Its popularity is said to be chiefly due to its late ripening habit—6 to 6½ months—and high yield.

The results, when statistically analyzed, have proved to be significant at all the three stations. But they have to be taken cautiously at Himayet Sagar because of the tremendous variation in the yields of the same strain from block to block and of the different strains in the same block. Very great soil variability seems to prevail. Anyhow at Himayet Sagar our strain No. 504 has proved superior to all the rest. At Sangareddi and Warangal the first rank is taken by strain No. 80 in the *abi* season. It was not sown in the *tabi* at Warangal and the experiment proved a failure at Sangareddi due to water scarcity. There is much soil variability at Warangal also but, it is not so drastic as at Himayet Sagar. As the conditions at Sangareddi are the most uniform of the three stations, the results obtained there have been summarized

and shown in the attached Statement XV. Our new strain No. 80, a fine rice, slightly flavoured, has proved significantly superior at Sangareddi to both the locals tried, viz., Nizam Gaod and Teksannal with 12.45 per cent. and 21.82 per cent. superiority respectively. The former is just equal to the critical point and the latter well exceeds it. At Warangal also the first position has gone to our No. 80 and the second to our strain No. 127. The former is 62.2 per cent. superior to the local Palasannal and the latter 60.4 per cent. Their respective superiority over the popular newly introduced Madras rice G. E. B. 24 is seen to be 4.24 per cent. and 3.08 per cent. in the *abi*. They were not tested in the *tabi*.

#### *E. New Types from Old Cultures and Strains.*

Cultures No. 2 and No. 207 and strain No. 263 have been found to be in a heterozygous condition. They have produced plants varying in important plant characters like habit of growth, time of flowering, plant colour, size and colour of awns, etc. Four distinct types have been noticed in No. 263, namely.

- (i) Green Decumbent
- (ii) „ Erect
- (iii) Red Decumbent.
- (iv) „ Erect.

These types were isolated and their progeny grown separately in the *tabi* under report. It is suspected that the green decumbent type is late flowering, and, red decumbent, early flowering. Further observations are required and will be done in the next *abi* season.

Cultures No. 2 and 207, being early flowering and early maturing, were grown in the *tabi* season also and their study continued. Table II referred to above illustrates their variations and some important characters.

#### *F. Hulling Tests.*

The following ten improved strains, eight early and two late maturing, which have been released for yield trials to the Deputy-Directors of the East and West Telingana Divisions, were subjected to hulling tests, after the *raiyyat's* method. The proportions of whole rice and *kanki* (broken grain) obtained in the *abi* and

the *tabi* seasons are given below. However, much store cannot be put by these figures as all the strains were not grown in the same plot so as to receive similar treatment till harvest.

*Percentages of Whole and Broken Grain in some Improved Strains of Rice.*

Srl. No.	Strain No.	PERCENTAGES OF					
		WHOLE GRAIN		BROKEN GRAIN		CHAFF	
		Abi	Tabi	Abi	Tabi	Abi	Tabi
1	2	3	4	5	6	7	8
			<i>I. Early Strains.</i>				
1	161	45	35	30	34	25	31
2	242	30	62	47	6	23	32
3	248	36	55	38	18	26	27
4	263	25	25	46	46	29	29
5	264	42	33	30	33	28	34
6	504	29	35	35	29	36	36
7	539	65	27	8	40	27	33
8	541	26	60	44	8	30	32
			<i>II. Late Strains.</i>				
1	80	35	37	34	29	31	34
2	127	56	39	14	26	30	35

These tests were conducted in triplicate on 5 lb. lots in each case. The results reported on are averages based thereon.



*G. Cooking Tests.*

Our Agricultural Chemist was good enough to conduct cooking tests on the undernamed seven improved strains of rice in the abi of the year under review :—

1.	No.	80
2.	„	161
3.	„	242
4.	„	248
5.	„	263
6.	„	264
and 7.	„	504

His remarks are given below :—

Srl. No.	Strain No.	Remarks
1	2	3
1	80	Uniform, white, slightly, scented, medium type and a little elongated, loose.
2	161	Creamy white, ordinary flavour, taste flat, loose, medium fine, and a little elongated.
3	242	Uniform, white, ordinary flavour, taste flat, loose, medium fine, and a little elongated.
4	248	Uniform, white, ordinary flavour, taste flat, loose, stubby.
5	263	Dim white, ordinary flavour, coarse, stubby and slightly sticky.
6	264	White with brown grains interspersed, medium type, ordinary flavour, stubby and loose.
7	504	Uniform, bright white, ordinary flavour, fine, elongated, loose

Strain No. 80 is quite good; No. 504 is also good.

## 4. KHARIF JOWAR IMPROVEMENT.

*The Season.*

The total rainfall received in this crop-year, *i.e.*, from Amerdad 1345 F. to Thir 1346 F. (June 1936 to May 1937) measured 32.38" or just 1.81" less than that of the previous year. The distribution was better on the whole than in the last year, though surely not very good in itself. 20.87" fell in the first four months. Just before the *rabi* plantings a good fall of 1.93 was received in the four days, September 25-28. October was practically dry as it ought to be. November also received rain as it should but the total was greatly in excess of what it should be. Actually 8.73" fell as against 1.5"—2.0" the normal. In fact not for 27 years before had such heavy precipitation been recorded. This rain did much damage to the standing *kharif* jowar crop, the harvest of which was delayed. December was dry and so too January. February, March and May were practically dry but April received a fall of 2.71"

(ii) *The Plots.*—The farm plots C5, C6, C7 (part), C61 and B5 were used for *kharif* jowar work. The first three had been planted to groundnut the previous year and the last two to cotton. Thereafter, they were given a deep ploughing and several harrowings with a *bakhar* or bladed harrow.

(iii) *The Work.*—It was carried out under the following items :—

- A. Comparative Yield Test,
- B. Type Maintenance and Production of Self-pollinated seed,
- and C. Individual Plant Selection Studies.

(iv) *The Crop.*—The seed was sown from Amardad 14-19, 1346 F. (June 19-24, 1937). The seed was dibbled in by means of iron dibblers at the rate of two per hill and spaced 9" apart in the row. The rows were planted 2' apart. Satisfactory germination was observed in five days from planting and all gaps were filled within a week to ten days. The stand was thinned to a plant per hill, when the height of the crop was 15".

About the second week after sowing the common pest, (*Chilo simplex*), the stem-borer appeared. The

usual control measures were adopted, chief among them being the setting up of light-traps. The pest kept on until flowering time, although its intensity declined with the advance of the season.

Millipedes also appeared earlier in the season but in smaller numbers than in the past year. They were picked and destroyed.

Mil attacks of the jowar rust—*Puccinia perpureum*—and leaf-shred and green-ear—*Sclerospora graminicola* were observed in stray spots.

Flowering started about the last week of Aban 1345 F. (September 1936) and heading was over after six weeks. The crop would normally have been harvested in the first two weeks of Dai (November), but had to be put off until early Behman (December) because of the untimely and unusual heavy rains in the former month.

### (v) EXPERIMENTS.

#### A. Comparative Yield Test.

The varieties of *khariif* jowar represented in this test were four, namely, Ramkhel, Saoner, Godgharaya and Nanded White as in the past year. The same two single-plant cultures from each, which had been tried out the previous season were again tested. The experiment was in fact in its second year. The control used was the local *khariif* jowar known as Nanded Yellow.

The plot measured  $330' \times 132'$ . It was divided into 12 blocks each  $78'$  long  $\times$   $37\frac{1}{2}'$  wide, separated by  $3'$  wide inter-alleys and bounded on the north and south by two  $4\frac{1}{2}'$  wide border alley-ways on the east and the west. Each block was sown to 40 rows in all spaced  $2'$  apart, with 50 hills to a row spaced  $9''$  apart. Two extreme rows at the north and two at the south end were called border rows and were discarded at harvest to avoid the border-effect. This left 36 rows or 4 rows per culture in each block for harvest and calculation. The cultures were randomized in the blocks. At harvest two end-plants, one at either end, (east and west), of all the rows, were discarded in order to do away with the end-effect. The experiment was interpreted according to Fisher's Method of Analysis of Variance, after weighting the yield of each culture in each block to cent per cent stand. The experiment was

run in duplicate, hence, the yields have been averaged after weighting and their interpretation has been summarized in Statement XVI. The results are statistically significant. All the eight strains tested have proved superior to the local in grain yield. As regards *kadbi* only Saoner 1542 and Saoner 1616 have significantly excelled the local, the former taking the first rank. Of the two plots used in this experiment, viz., C 6 and C 61, the former was the more uniform. Considering the grain yields obtained on it alone, all our strains have proved statistically superior to the local. On a percentage basis Saoner 1616 stands first with 110.8 per cent. excellence over the local. Nanded White 938 excels by 58.8 per cent., which is the lowest limit. In *kadbi* production Saoner 1616 significantly surpasses all the rest, including the local, over which it has shown 34.8 per cent. superiority. Saoner 1542 has produced 15.3 per cent. more *kadbi* than the local. In this plot Saoner 1616 has thus stood at the top in the production of grain as well as forage and Saoner 1542 next to it.

### B. Type Maintenance.

Two rows of each of these eight cultures of *kharif* jowar were planted at the rate of 150 individuals to a row. The distances between plants and rows were the same as described above. About 150 of these 300 plants per culture were self-pollinated by means of brown paper bags. A plant-to-plant study was made for the under-named four characters:

- (i) Number of nodes
- (ii) Mid-rib colour
- (iii) Ear type
- and (iv) Grain colour.

Abnormal and off-type plants were rouged out. Sufficient seed was thus raised for the next season.

### C. Village Samples of 1344-45 F. (1935-36).

It was stated in my last Annual Report that number of individual plants had been selected and self-pollinated from 25 samples of *kharif* jowar obtained through the Deputy-Director of Agriculture, Godavari Division, in the preceding hot weather. After a laboratory study some 119 such plants were retained and sown in the

*Sharif* under report. The seed of each of these was planted separately in two rows. After every six selections, *i.e.*, after every twelfth row one row of local (Nanded Yellow) jowar was sown, so that each set of twelve rows was flanked on both sides by a row of the local for comparison as a standard. The rows were 60' long spaced  $1\frac{1}{2}'$  apart and carried 80 hills each spaced 9" apart. A detailed plant-to-plant study of various characters was made and some 75 plants were self-pollinated in each of the single-plant cultures. After a laboratory study the best of them 125—individual plant selections—have been retained for the next season.

#### D. New Lines.

61 new lines had been started the previous *khariif*, by selecting as many promising single plants from R 1586, R 1601, S 1542, S 1616, G 91, G 1085, N.W. 938 and N.W. 1025. The distances in the row and between rows were the same as above but there were 88 hills to a row. Every two-row set of six of these new sub-lines was flanked on either side by a row of the local. 75 plants were self-pollinated in each of these sub-lines and after a study in the laboratory 66 have been retained for further work.

9 new single-plant selections, 3 from Ghodgharia, 4 from a sample of *khariif* jowar acquired in 1344-45 F. from Aurangabad and one each from a sample from Mehboobnagar and Sangareddi were planted and studied during the year.

#### 5. RABI JOWAR IMPROVEMENT.

(i) *The Season*.—A full description of the seasonal conditions has already been given above in connexion with our work on *khariif* jowar. It may further be mentioned here that a cold wave swept over the district in the month of Farwardi, (February), which frosted the leaves. But the frost had come so late in the season as to cause no serious damage to the grain, which had already set.

(ii) *The Plots*.—The work was conducted in two entire acre plots C 11 and C 62 and a part of a third C 7. Ground-nut had been raised in the previous *khariif* on plots C 7 and C 11, whereas cotton had been grown

on plot C 62. All the plots were given the usual preparatory treatment, namely, one good plowing and several harrowings from the time the previous crop had been removed to the new sowings.

(iii) *The Work*.—It was conducted under the following three heads :—

A. Comparative Yield Test,

B. Type Maintenance and production of self-pollinated seed

and C. Individual Plant Selection Studies.

(iv) *The Crop*.—The seed was put down from Azoor 1-2, 1346 F. (October 6-7, 1936). The rows were planted 2' apart and the seeds in the rows 9" apart with 2 per seed-hole, dibbled in by hand with an iron dibbler. Satisfactory germination occurred and all gap-filling was completed within a week. When the crop was about 12" high, it was thinned to a plant per hill. Flowering started in the third week of Behman (December) and the harvest was done from Farwardi 20-24, 1346 F. (February 21-25, 1937). The growth of the crop was satisfactory on the whole, though a bit stunted in Plot C 11.

A mild attack of the stem-borer occurred as usual and was kept in hand by means of removal and destruction of dead hearts and the setting up of light-traps. Later in the season leaf rust occurred but did not cause much damage due to its late appearance.

#### (v) EXPERIMENTS.

##### A. *Comparative Yield Test*.

14 single-plant cultures of *rabi* jowar were compared to one another and local, white, *dagdi* jowar for their grain and *kadbi* production. They were

(i) Dagdi	..	801
(ii) „	..	802
(iii) „	..	803
(iv) „	..	804
(v) „	..	806
(vi) „	..	807
(vii) „	..	809

(viii)	Hyderabad	..	5
(ix)	"	..	15
(x)	"	..	30
(xi)	"	..	32
(xii)	"	..	35
(xiii)	"	..	39
(xiv)	"	..	47
and (xv)	Local		<i>Dagdi.</i>

The test was run in duplicate in two acre-plots—C 11 and C 62, each measuring  $330' \times 132'$ . Each plot was divided into 10 equal sections measuring  $118' \times 30'$  each. A randomized arrangement of the cultures within the block was followed. Each block carried 62 rows of which two, one at each of the two borders (east and west), were called border rows. They were discarded at harvest in order to avoid the border-effect. This left 4 rows per culture per block, all of which were harvested and calculated upon. The rows were 30' long and spaced 2' apart. Each row carried 40 plants spaced 9" apart. The plot in both cases was bounded on the north and the south by a 6' wide main alley-way and on the east and the west by a 5' wide main alley-way. The inter-alleys between the blocks were each 2' wide. Two end-plants at each of the two ends of every row were discarded in order to do away with the end-effect. The experiment was interpreted after Fisher's Method of Analysis of Variance and found to be highly significant in each of the two plots. The yields of the plots were weighted separately to a cent per cent. stand in each case, then averaged and interpreted. Statment XVII summarizes the results. It is seen that in grain yield H 47 significantly excels the local as well as the rest of the tested strains, except D 809, H 5 and H 15. Although there is no statistically significant superiority between these four strains, the per cent. excellence of H 47 over the local is 48.7, whereas that of the last three is only 29.9, 28.2 and 44.4 respectively. The position is quite different, when the *kadbi* production is considered. Here the first rank goes to D 809 with 23.4 per cent. superiority over the local and the second to H 39 with 22.3 per cent. excellence, the two strains being statistically equal among themselves. H 15 is also equal to D 809 and H 39, statistically speaking. H 5, H 15 and H 39 are similarly on a par. But

D 809 is significantly a heavier yielder of *kadbi* than the local and all the strains tried, except H 15 and H 35. Taking into account the grain and the fodder performance, D 809 has proved the best in the season under report.

During the year under review four of our promising improved strains of *rabi* jowar, namely, D 803, D 809, H 32 and H 47, were released to the Deputy-Director of Agriculture, Godaveri Division, Parbhani, to be tested for grain and *kadbi* yield against the local *dagdi* jowar. Of these 4 strains D 803 is a dwarf type. The experiment was run at the Main Agricultural Experiment Station at Parbhani according to Fisher's Method of Randomized Blocks in 1/100 acre plots replicated ten times. The test has proved statistically significant both for grain and *kadbi*. Statement XVIII shows that our strains H 47 and H 32 are significantly superior to the local in grain yield, the latter excelling the local in *kadbi* production as well. As far as H 47 is concerned these results are in conformity with those obtained in the Botanical Section. One thing of interest is that strain D 803, which is a dwarf, is equal in grain production to the local. Not only this but even in the yield of *kadbi* D 803 is fully as good as the local, which is a standard (tall) variety. This means, that, very likely, in places and years of scanty rainfall our dwarf strain may even excel the local in its dual production. It is, therefore, intended to test D 803 at the Main Agricultural Experiment Station, Raichur, in the coming season, Raichur being a low rainfall tract of our Dominions.

### *B. Type Maintenance.*

Six rows of each of these 14 cultures of *rabi* jowar were planted in a separate plot for plant-to-plant observations and production of self-pollinated seed from typical plants in each culture. Abnormal and off-type plants were removed and 150 desirable ones "selfed" in each case. Individual plant notes were taken on the

- (i) Number of nodes
- (ii) Mid-rib colour
- (iii) Ear type
- and (iv) Grain colour.



### C. *New Lines.*

13 new single-plant selections have been taken from the 4 new sub-lines started in the year under review from cultures D 802, D 809 and H 5—one each from the two former and two from the latter. They are under study in the usual detailed manner.

### D. *Release of Improved Strains.*

In the season under review four of the improved strains of the Economic Botanist were released to the Deputy-Director of Agriculture, Godaveri Division, Parbhani, for being tested against the local white *dagdi* jowar. They were D 803, D 809, H 32 and H 47. The results have already been described above and have proved encouraging. With sufficient seed becoming available next year, the trial will not only be repeated at Parbhani but also extended to the rest of the Main Agricultural Experiment Stations of our Department.

## 6. WHEAT IMPROVEMENT.

(i) *The Season.*—As has been stated in the earlier part of this report the season was fairly good, although a dry period occurred from Behman to Farwardi 1346 F. (December 1936 to February 1937). The cold wave that passed over in the month of Farwardi (February) did not do any damage to our wheat.

(ii) *The Plots.*—Two plots C 9 and C 31 each an acre in area were used for the work. C 9 had been under wheat the previous *rabi* but was fallowed in the *kharif* of the year under report. C 31 had been under cotton a year ago and in the succeeding *kharif* similarly fallowed. Both the plots had been ploughed deep once in Khurdad 1346 F. (April 1937) and *bakharred* several times thereafter as required.

(iii) *The Work.*—It was done along the following lines:

- A. Comparative Yield Tests,
- B. Type Maintenance and Production of Self-pollinated seed,
- C. Study of the  $F_2$  generation of the Cross Aur. 472-A  $10 \times$  Bom. 224,

- D. Individual Plant Studies,
- E. Study of New Acquisitions,
- F. Release of Improved Strains.

(iv) *The Crop*.—Plot C 9 was planted from Aban 30, 1345 F. Azoor 1, 1346 F. (October 5-6, 1936). Plot C 31 was sown from Azoor 2-3, 1346 F. (October 7-8, 1936). The germination was good and all gaps were filled within a week after sowing. As the seed had been hand-dibbled at the rate of 2 per seed-hole, thinning was done and completed after the third week. The spacings throughout the same, being 18" between rows and 4" in the row. The crop grew well in both the plots. However, it was uniform throughout plot C 9, whereas in plot C 31 it was not so in the north-west portion.

Flowering started fully a fortnight earlier this year than in the previous, that is, in the last week of Dai (November).

The crop was ready and harvested from Farwardi 3-Ardebehisht 18, 1346 F. (February 4-March 22, 1937).

As usual stem-borer attack was seen in both the plots. But it was very mild. Similarly, a very mild attack of stem and leaf rust was also noted but in plot C 9 only, except in one part of it, where it was very severe on strains Osm. 23-10 and Osm. 85-6. The two will be particularly watched in the next season.

#### (v) EXPERIMENTS.

(a) *Comparative Yield Tests*.—Three comparative yield tests were run. 10 single-plant cultures were tried against local wheat in Test No. 1 for grain production. The plot used was C 9 measuring 330' N.S.  $\times$  132' E.W. This plot was divided longitudinally into two main sections, separated by a 5' alley-way, running north-south. An alley-way 5' wide was laid down at the east and the west border. Those at the north and the south borders were each 9' wide. Each of the main sections of the plot was divided into 15 equal blocks, each 58½' E.W.  $\times$  18' N.S. by means of 14 inter-alleys, each 3' wide. In every block of the eastern section 4 border rows of culture 38 were planted at the eastern extreme and 3 border

rows of the same at the western. In the western section 4 border rows of culture 38 were sown at the western extreme of each block, but only 3 at the eastern. These rows were discarded at harvest in order to avoid the border effect. Similarly, all plants within a foot at either end of each row were discarded so as to eliminate the end-effect. The same was done in Yield Tests No. 2 and No. 3, but there were only two border rows of culture 38 at all the borders of all its blocks in the former and 6 border rows 3 at each of the two borders of every block in the latter.

(i) *Yield Test No. 1*—It was run in duplicate plots C 9 and C 31 with identical technique as described above. 8 strains of ours were tested against Cawnpore 13 A, Pusa 4 and local wheat in 10 randomized blocks with 3 rows to a strain in each block. There were 55 hills per row spaced 4" apart with 1½' as the inter-row distance. The material tested consisted of

- (i) Aur. 460-B 1.
- (ii) „ 461-A 2.
- (iii) C. P. 137-7.
- (iv) Cawn. 13-A.
- (v) Osm. 23-7.
- (vi) „ 23-10.
- (vii) „ 72-4.
- (viii) „ 85-6.
- (ix) „ 119-4.
- (x) Pusa 4.
- and (xi) Local.

The experiment has proved significant in both the plots and Statement XIX gives a summary of the combined results, (weighted to a cent per cent. stand and averaged), interpreted after Fisher's Method of Analysis of Variance. Osm. 85-6 and Cawn. 13 A have proved superior to Pusa 4 and the local, the latter (Cawn. 13 A) being just significantly better than the local.

(ii) *Yield Test No. 2*.—10 of our single-plant cultures were tested against Pusa 4 and the local in six

replications of Fisher's Randomized Blocks. These 12 are given below:—

- (i) Aur. 460-B 1.
- (ii) „ 461-A 95.
- (iii) „ 467-A 12.
- (iv) Bdr. 489-B 12.
- (v) C. P. 137-7.
- (vi) Med. 508-A 6.
- (vii) „ 509-A 2.
- (viii) „ 509-A 2 Y.
- (ix) „ 510-59.
- (x) 38.
- (xi) Pusa 4.

and (xii) Local.

This experiment was also run in duplicate and proved significant in each case. Statement XX attached gives the combined (weighted to a cent per cent. stand and averaged) results. It is seen that all the cultures and local wheat are superior in grain yield to Pusa 4. Cultures Bdr. 489-B12 and Aur. 467-A12 are superior not only to the local and Pusa 4 but also to Aur. 460-B1, Aur. 461-A95, 38, Med. 510-59, Med. 509-A2, Med. 508-A6, Med. 510-59 and C. P. 137-7.

(iii) *Yield Test No. 3.*—Our yield Test No. 3 of the last year having proved statistically insignificant, it was repeated this year, with the exception that one culture Osm. 119-4 has been excluded from it. The remaining material consisted of

- (i) Bd. 521-1.
- (ii) „ 521-A1.
- (iii) „ 522-A2.
- (iv) „ 525-A1.
- (v) „ 525-6.
- (vi) „ 527-7.
- (vii) PBN. 130-4.
- (viii) „ 528-23.
- (ix) „ 528-31.
- (x) „ 528-40.

(xi)	„	528-42.
(xii)	„	528-56.
(xiii)	„	528-70.
(xiv)	„	528-77.
(xv)	„	528-79.
(xvi)	„	Pusa 4.

and (xvii) Local.

Four replications were used after Fisher's Method of Randomized Blocks. Two rows were sown to each of the seventeen. No duplicate was run. The results summarized in Statement XXI show that the experiment has proved statistically significant, and, that Bd. 522-A2 has shown itself to be significantly a heavier grain yielder than all the rest. Besides, all our strains are seen to be superior to Pusa 4 as well as to local wheat. The cultures in this test appear to be quite promising, the range of superiority over the local being from 8 to 57 per cent. the first place going to Bd. 522-A2 with 57 per cent. excellence. PBN. 528-42 and PBN. 528-77 are each 47 per cent. better, Bd. 521-1 is 44 per cent. better, PBN. 528-70, Bd. 525-6, PBN. 528-23, PBN. 130-4, PBN. 528-56, PBN. 528-31, Bd. 525-A1, Bd. 527-7, PBN. 528-40, PBN. 528-79, and Bd. 521-A1 are 39, 35, 34, 30, 29, 25, 25, 23, 18, 12 and 8 per cent. heavier grain yielders respectively.

### (B) *Type Maintenance.*

The 33 strains and cultures used in the above-described three yield tests were sown in plot C 31. Each was planted to six rows and a plant-to-plant study was made. The purpose of this plot was to produce seed from typical plants for use in the next season.

### (C) *Study of F<sub>3</sub> Generation of the Cross*

*Aur. 472A-10 × Bom. 224.*

169 individuals were selected from 1990 of the previous generation and grown in the year under review. The mean date of awn emergence in Aur. 472 A-10 was found to be Isfandar 1, (January 3,) and that of Bom. 224 Behman 18 (December 21). Much variation was noticed in this date among the F<sub>3</sub> progeny. It ranged from Dai 20, (November 24), the earliest to Isfandar 16,

(January 18) the latest. Thus the earliest to flower in the  $F_3$  progenies flowered nearly a month before the early parent and the latest flowered fully two weeks after the late parent. The mean yield of grain per plant ranged from 5.4 gms. to 18.6 gms. The material is being purified for homogeneity in its plant characters, the heterozygous families being discarded in the field. Some of the characters studied were smooth or hairy chaff, awn and gloom colour, grain colour and size, etc. The object involved in this study is ultimately to isolate high yielding early maturing types with a good grain quality and less susceptibility to wheat rust. 30 promising families have been selected and earmarked for study in the next rabi.

#### (D) *Individual Plant Studies.*

In the year 1344-45 F. (1935-36) 29 samples of wheat were collected by the undersigned from the *raiya*t's fields in Aurangabad. Of these one sample was discarded due to its impurity in plant characters. From the remaining 28 some 101 individual plant selections were made and studied this year. The cultures 538-37 and 552-5 have proved to be 19.6 per cent. and 10.6 per cent. better grain yielders than the adjoining locals with which they had been grown. This study will be prosecuted further in the next season with the best of the material.

#### (E) *New Acquisitions.*

No new samples were acquired during the year but seven single-plant selections have been made from Pusa 4 and Cawnpore 13-A. One of these was found to be heterogeneous.

#### (F) *Release of Improved Strains.*

As stated in the last year's report the programme of wheat varietal test to be run at and by the Main Agricultural Experiment Station, Parbhani, was drawn up and given to the Deputy-Director of Agriculture, Godavari Division. This test contains 10 wheats of which one is Local, another Pusa 4 and the third Cawn. 13-A. The remaining 7 are improved strains of the Economic Botanist. These are Aur. 460B-1, Aur. 461A-2, C. P. 137-7, Osm. 23-10, Osm. 72-4, Osm. 85-6 and Osm. 119-4. This comparative yield test was laid down after Fisher's Method of Randomized Blocks with 10 replications. It

has proved significant statistically and the results are summarized in Statement XXII. We see from it that our strains Aur. 460B-1 and Osm. 119-4 have proved superior to the Local wheat in the yield of grain. All our strains, moreover, have shown their superiority over Pusa 4. The difference between the least yielding of our improved strain Aur. 461A-2 and Pusa 4 is 184.64 per cent. in favour of the former. Our highest yielding strain Aur. 460 B-1 is 34 per cent. superior to local wheat. The season was practically rustless, so that all the wheats remained free of rust.

*Acknowledgments.*—The Economic Botanist has the pleasure to thank the members of his staff, who have efficiently carried out their entrusted work under his care. He also appreciates the co-operation received in the year from his Sectional Colleagues and their staff.

He is similarly thankful to the Director of Agriculture for the help given in discharging his duties.

10. *Prospects.*—Every activity of the Economic Botanist's Section has been overhauled. The speed of progress may seem slow at times. But, looking to our limited staff, equipment and funds and the peculiar difficulties of the Section, it has to be conceded that every step taken has been a step forward and in the right direction. Before so very many years elapse, we shall face the people of our great State with fresh and precious gifts in the shape of new valuable improved strains of every one of the five crops, which we are handling at present, and, the annual total valuation of which reaches the enormous sum of thirty crores.

(Sd.) A. B. H. KHOORSHID,

ECONOMIC BOTANIST,

*H.E.H. the Nizam's Government.*

MAIN AGRICULTURAL EXPERIMENT STATION,

HIMAYET SAGAR.

26 and 527.

11)	(75)	(522)	(245)
81	1332	1285	1262
13)	(526)	(112)	(244)
56	976	1082	1149
8)	(263)	(244)	(84)
82	1136	873	869

Me	(526)	(527)	General Mean	Standard error of treatment mean	Whether general effect of treatment is significant by "Z" test	Critical difference for significance in Gramme
1. F						
2. P	989.3	1042.3	1154.4	64.4		192.
3. P	85.6	90.2	100.0	5.6	Yes	16.
	76.1	80.2	88.7	4.9		14.









## STATEMENT XIII

*Rice Yield Test conducted at the Main Agricultural Experiment Station,  
Himayet Sagar, in Tabi 1345-46 F.  
1936-37*

Site :—Main Agricultural Experiment Station, Himayet Sagar.

Comparison of 3 Single-Plant Cultures + Standard No. 263 ] 263; 678-12; 679-20 and 681-20

System of replication: .. 4 × 3 randomized blocks.

Effective length of each row: 19'10"

Soil: .. Sandy clay 4' deep

Basal manuring to the Nursery: At the rate of 8.2 tons of farm compost per acre.

Seed sown on .. Dai 29, 1346 F.

Transplanted on .. December 3, 1936

Isfandar 8, 1346 F.

January 10, 1937

Harvested on .. Khoordad 20, 1346 F.

April 24, 1937

Previous crop .. Abi rice.

*Plan and Grain Yields (in grammes) per row 19'10" long.*

Block	(679-20)	(678-12)	(681-20)	(263)
I	374	580	309	517
II	584	530	582	562
III	356	670	550	452

## SUMMARY OF RESULTS.

Mean yield per row in grammes	(263)	(678-12)	(679-20)	(681-20)	General mean	Standard error of treatment mean	Whether general effect of treatment is significant by "Z" test	Critical difference for significance in grammes
Per row ..	543	611	470	398	505.5	39.04	..	117.12
Per cent. on general mean	107.4	120.8	92.9	78.7	100.0	7.7	Yes	23.10
Per cent. on control	100.0	112.5	86.5	75.1	93.0	7.20	..	21.60

*Conclusions :—*

1. 678-12 > 679-20 and 681-20
2. 263 > 681-20.



TABLE I.

*Showing some of the important characteristics of 48 Single-Plant Cultures of Rice grown in the Abi of the crop-year 1345-46 F. (1936-37) at the Main Agricultural Experiment Station, Himajet Sagar.*

Serial No.	SINGLE-PLANT CULTURE AND KIND OF GRAIN			FLOWERING & MATURITY		Habit at Harvest	Average Grain Yield Per Plant in Grams	Remarks
	Fine	Medium	Coarse	Date	Period			
1	2	3	4	5	6	7	8	9
1	611-16	..	..	Sept. 15	123	Erect	18.4	Scented.
2	28	..	..	" 17	123	"	22.2	
3	612- 4	..	..	Sept. 17	123	"	17.5	
4	635- 5	..	..	Oct. 18	147	"	28.8	
5	641-13	..	..	Sept. 24	153	"	18.4	Scented.
6	650-17	..	..	" 12	123	Lodging	19.0	
7	656- 4	..	..	Oct. 15	153	"	11.5	
8	658- 7	..	..	" 18	147	Erect	14.6	
9	9	..	..	" 16	147	"	23.2	
10	14	..	..	" 18	153	"	14.8	
11	28	..	..	" 19	147	"	15.3	
12	33	..	..	" 18	147	"	16.4	
13	661- 4	..	..	" 10	145	Lodging	15.3	
14	670-10	..	..	" 11	144	Erect	32.4	
15	..	634-29	..	Sept. 13	123	"	16.8	Round Grain.
16	..	638-20	..	Oct. 10	113	"	31.7	
17	..	651-26	..	" 6	141	"	20.0	
18	..	625-11	..	Sept. 8	109	"	14.7	
19	..	661- 7	..	Oct. 10	145	Lodging	17.4	
20	..	662- 7	..	" 11	145	"	16.3	
21	..	666- 8	..	" 7	141	"	17.7	
22	..	666-12	..	" 6	141	"	19.7	
23	..	678- 5	..	Sept. 19	125	"	20.4	
24	..	..	646-27	Oct. 22	147	Erect	25.5	
25	..	..	656- 7	" 17	147	Lodging	17.0	
26	..	..	659-17	" 10	145	"	16.5	" "
27	..	..	27	" 7	144	Erect	25.9	" "
28	..	..	664- 6	" 11	145	Lodging	16.4	" "
29	..	..	665- 5	" 9	144	"	19.3	" "
30	..	..	21	" 9	144	"	20.4	" "
31	..	..	667- 6	" 8	129	"	23.3	" "
32	..	..	12	" 8	141	Erect	17.2	" "
33	..	..	13	" 8	141	"	16.3	" "

TABLE I.—(concl'd.)

*Showing some of the important characteristics of 48 Single-Plant Cultures of Rice grown in the Abi of the crop-year 1345-46 F. (1936-37) at the Main Agricultural Experiment Station, Himayet Sagar.*

Serial No.	SINGLE-PLANT CULTURE AND KIND OF GRAIN			FLOWERING & MATURITY		Habit at Harvest	Average Grain Yield Per Plant in Grammes	Remarks
	Fine	Medium	Coarse	Date	Period			
1	2	3	4	5	6	7	8	
34	..	..	677—1	Sept. 27	122	Lodging	16.4	
35	..	..	8	„ 13	122	Erect	18.0	
36	..	..	18	„ 27	125	Lodging	15.8	
37	..	..	19	„ 27	132	Erect	24.1	
38	..	..	678—4	„ 13	122	Lodging	18.6	
39	..	..	9	Oct. 5	144	Erect	33.7	
40	..	..	12	Sept. 12	129	„	34.0	
41	..	..	12-A	„ 8	121	Lodging	30.3	
42	..	..	18	„ 8	129	„	29.4	
43	..	..	679—17	„ 13	121	„	36.8	Scented.
44	..	..	20	„ 11	121	„	31.3	„
45	..	..	681—8	„ 20	121	„	28.7	
46	..	..	12	„ 12	129	Erect	23.7	Very coarse
47	..	..	18	„ 20	129	„	34.4	
48	..	..	20	„ 11	129	Lodging	33.8	

TABLE II.

*Showing some important characteristics of 21 single-plant selections of rice taken from the heterogeneous old cultures No. 2 and No. 207 grown at the main Agricultural Experiment Station, Himayet Sagar, in the crop-year 1345-46 F. (1936-37.)*

Serial No.	No. OF THE SELECTION		DATE OF FLOWERING IN		Habit at Harvest	PER PLANT GRAIN YIELD		
	Fine Shedding	Fine Non-Shedding	Abi	Tabi		Season		Average of the two Seasons
						Abi	Tabi	
1	2	3	4	5	6	7	8	9
						Gms.	Gms.	Gms.
1	..	2- 18- 3	Sept. 14	Mar. 16	Lodging	64.0	25.9	44.95
2	..	2- 18-27	„ 14	„ 18	„	49.0	23.8	36.30
3	..	2- 39-21	„ 14	„ 11	„	67.0	22.8	44.65
4	..	2- 76- 9	„ 14	„ 17	„	69.0	20.8	44.70
5	..	2- 76-11	„ 14	„ 7	„	69.0	20.0	44.50
6	..	207- 92- 2	„ 8	„ 5	„	61.0	17.2	39.10
7	207-92- 4	..	„ 8	„ 7	„	45.0	14.4	29.70
8	..	207- 92- 5	„ 8	„ 4	„	54.0	17.8	35.90
9	207-92- 6	..	„ 8	„ 5	„	49.0	21.2	35.10
10	207-92-13	..	„ 8	„ 6	„	65.0	17.6	41.30
11	..	207- 92-17	„ 8	„ 4	„	45.0	9.8	27.20
12	207-92-24	..	„ 8	„ 5	„	54.0	20.1	37.10
13	..	207-92-26	„ 8	„ 6	„	47.0	21.1	34.10
14	..	207-102-11	„ 8	„ 4	„	41.0	10.7	25.90
15	..	207-102-13	„ 8	„ 4	„	48.0	12.0	30.00
16	..	207-102-28	„ 8	„ 4	„	47.0	8.5	27.80
17	..	207-114- 8	„ 8	„ 8	„	44.0	11.2	27.60
18	..	207-114- 9	„ 8	„ 5	„	55.0	10.5	32.80
19	..	207-114-13	„ 8	„ 4	„	41.0	7.4	24.20
20	..	207-114-14	„ 8	„ 5	„	42.0	4.1	23.10
21	..	207-114-24	„ 8	„ 10	„	57.0	16.9	36.90





## III.

*Selections of Rice grown in the Abi of the crop-year 1345-46 F. (1936-37) at the Main Station, Himayet Sagar.*

PLANT NUMBER						Flowering Time and Period of Maturity		Average Grain Yield per Plant in Gram- mes
AND NON-SUEDDING								
ECT		DECUMBENT				Date	Days	
Round	Coarse	Fine	Me- dium	Round	Coarse			
12	13	14	15	16	17	18	19	20
..	..	..	..	..	..	Sept. 15	142	38.0
..	..	..	..	..	..	18	142	36.0
..	..	687-5	..	..	..	15	129	45.0
..	..	689-7	..	..	..	9	125	49.0
..	..	10	..	..	..	12	125	42.0
..	..	12	..	..	..	8	125	45.0
..	..	15	..	..	..	7	125	58.0
..	..	16	..	..	..	7	125	40.0
..	..	18	..	..	..	7	125	40.0
..	..	19	..	..	..	7	125	47.0
..	..	25	..	..	..	8	125	48.0
..	..	699-2	..	..	..	14	109	35.0
..	..	7	..	..	..	14	109	35.0
..	..	8	..	..	..	14	109	28.0
..	..	10	..	..	..	13	109	32.0
..	..	12	..	..	..	14	109	33.0
..	..	16	..	..	..	14	109	29.0
..	..	19	..	..	..	13	109	30.0
..	..	22	..	..	..	13	109	38.0
..	..	24	..	..	..	13	109	39.0
..	..	28	..	..	..	13	109	30.0
..	..	30	..	..	..	13	109	31.0
..	..	32	..	..	..	13	109	37.0
..	..	..	682-6	..	..	Oct. 8	129	59.0
..	..	..	685-1	..	..	Sep. 26	129	62.0
..	..	..	3	..	..	27	129	60.0
..	..	..	29	..	..	26	129	55.0
..	..	..	687-2	..	..	10	129	49.0
..	..	..	10	..	..	27	129	47.0
..	..	..	690-3	..	..	Oct. 8	142	55.0



## III.—(contd.)

*Selections of Rice grown in the Abi of the crop-year 1945-46 F. (1936-37) at the Main Station, Himayet Sagar.*

PLANT NUMBER						Flowering Time and Period of Maturity		Average Grain Yield per Plant in Gram- mes
AND NON-SHEDDING								
ECT		DECUMBENT				Date	Days	
Round	Coarse	Fine	Me- dium	Round	Coarse			
12	13	14	15	16	17	18	19	20
..	..	..	690-26	..	..	Oct. 6	142	56.0
..	..	..	32	..	..	9	142	69.0
..	..	..	..	..	..	23	129	50.0
..	..	..	..	..	..	26	129	50.0
..	..	..	..	..	..	Sep. 22	122	32.0
..	..	..	..	..	..	29	122	32.0
..	..	..	..	..	..	16	122	32.0
..	..	..	..	..	..	Oct. 14	156	49.0
..	..	..	..	..	..	18	156	47.0
..	..	..	..	..	..	13	156	50.0
..	..	..	..	..	..	17	156	46.0
..	..	..	..	..	..	15	156	46.6
..	..	..	..	..	..	16	156	46.0
..	..	..	..	..	..	17	156	48.0
..	..	..	..	..	..	19	156	50.0
..	..	..	..	..	..	Oct. 15	156	42.0
..	..	..	..	..	..	18	156	44.0
..	..	..	..	..	..	17	156	46.0
..	..	..	..	..	..	19	156	44.0
..	..	..	..	..	..	18	156	48.0
..	..	..	..	..	..	16	156	44.0
..	..	..	..	..	..	17	157	47.0
..	..	..	..	..	..	14	156	45.0
..	..	..	..	..	..	16	156	48.0
..	..	..	..	..	..	17	156	45.0
..	..	..	..	..	..	18	156	48.0
..	..	..	..	..	..	17	156	49.0
..	..	..	..	..	..	16	156	48.0
..	..	..	..	..	..	20	156	49.0
..	..	..	..	..	..	18	156	48.0



## III.—(contd.)

*Selections of Rice grown in the Abi of the crop-year 1345-46 F. (1936-37) at the Main Station, Himayet Sagar.*

PLANT NUMBER						Flowering Time and Period of Maturity		Average Grain Yield per Plant in Gram- mes
AND NON-SHEDDING								
ECT		DECUMBENT				Date	Days	
Round	Coarse	Fine	Me- dium	Round	Coarse			
12	13	14	15	16	17	18	19	20
..	..	..	..	..	..	18	156	50.0
..	..	..	..	..	..	16	156	49.0
..	..	..	..	..	..	19	156	49.0
..	..	..	..	..	..	16	156	54.0
..	..	..	..	..	..	15	156	48.0
..	..	..	..	..	..	16	156	43.0
..	..	..	..	..	..	15	156	42.0
..	..	..	..	..	..	16	156	48.0
..	..	..	..	..	..	16	156	41.0
..	..	..	..	..	..	Oct. 18	156	41.0
..	..	..	..	..	..	16	156	41.0
..	..	..	..	..	..	18	156	45.0
..	..	..	..	..	..	17	156	46.0
..	..	..	..	..	..	17	156	42.0
..	..	..	..	..	..	18	156	43.0
..	..	..	..	..	..	18	156	42.0
..	..	..	..	..	..	20	156	42.0
..	..	..	..	..	..	17	157	47.0
..	..	..	..	..	..	18	157	47.0
..	..	..	..	..	..	17	157	58.0
..	..	..	..	..	..	18	157	47.0
..	..	..	..	..	..	16	157	48.0
..	..	..	..	..	..	17	157	60.0
..	..	..	..	..	..	16	157	43.0
..	..	..	..	..	..	18	157	49.0
..	..	..	..	..	..	18	157	58.0
..	..	..	..	..	..	17	157	41.0
..	..	..	..	..	..	16	157	50.0
..	..	..	..	..	..	17	157	51.0
..	..	..	..	..	..	18	157	42.0



## III.—(concl'd.)

*Selections of Rice grown in the Abi of the crop-year 1345-46 F. (1936-37) at the Main Station, Himayet Sagar.*

PLANT NUMBER						Flowering Time and Period of Maturity		Average Grain Yield per Plant in Gram- mes
AND NON-SHEDDING								
ECT		DECUMBENT				Date	Days	
Round	Coarse	Fine	Me- dium	Round	Coarse			
12	13	14	15	16	17	18	19	20
..	..	..	..	..	..	14	157	48.0
..	..	..	..	..	..	21	157	46.0
..	..	..	..	..	..	18	157	47.0
..	..	..	..	..	..	Oct. 16	157	48.0
..	..	..	..	..	..	18	157	40.0
..	..	..	..	..	..	16	157	41.0
..	..	..	684-2	..	..	5	129	40.0
..	..	..	..	..	682- 3	8	129	68.0
..	..	..	..	..	9	7	129	57.0
..	..	..	..	..	28	8	129	57.0
..	..	..	..	..	690-15	8	142	55.0
..	688- 6	..	..	..	..	8	142	50.0
..	24	..	..	..	..	7	142	70.0
..	30	..	..	..	..	9	142	47.0



TABLE IV.

*Showing some Important Characteristics and Grain Yield of 25 individual plant selections from 2 Samples of fine Rice grown at the Main Agricultural Experiment Station, Himayet Sagar, in the crop-year 1345-46 F.*  
1936-37

TABL.

Serial No.	SELECTION No.		FLOWERING TIME AND PERIOD OF MATURITY			GRAIN	Remarks
	Decumbent and Non-Shedding	Erect and shedding	Date	Days	Colour	Yield per plant in grammes	
1	2	3	4	5	6	7	8
1	689-1	..	March 10	139	White	16.0	Selections from Sholipoor Fine Rice our No. 689.
2	3	..	7	139	do	15.5	
3	7	..	8	139	do	15.2	
4	10	..	10	139	Dull White	15.4	
5	12	..	8	139	White	15.8	
6	15	..	9	139	Dull White	17.9	
7	16	..	9	139	Pearly White	13.2	
8	18	..	10	139	White	18.4	
9	19	..	10	139	do	14.2	
10	24	..	9	139	Dull White	14.3	
11	25	..	10	139	do	14.3	
12	30	..	12	139	White	13.6	
13	33	..	12	139	Dull White	14.5	
14	..	699-2	23	141	Pearly White	11.6	Selections from Pusa T 18. Fine Rice--Our No. 699.
15	..	7	24	141	do	10.8	
16	..	8	22	141	do	9.0	
17	..	10	23	141	do	7.3	
18	..	12	23	141	do	8.7	
19	..	16	23	141	do	9.7	
20	..	19	25	141	do	8.9	
21	..	22	23	141	do	8.1	
22	..	24	24	141	do	8.3	
23	..	28	23	141	do	7.4	
24	..	30	21	141	do	6.0	
25	..	32	22	141	do	5.6	

## APPENDIX I.

*Programme of work of the Economic Botanist, H.E.H. the Nizam's Government, for the year 1346-47 F. (1937-38).*

### A. HIMAYET SAGAR.

#### I. CASTOR IMPROVEMENT.

1. About 10-12 single-plant cultures will be compared among themselves and with the local for yield of seed in ten replications after Fisher's Randomized Blocks Method. This is a preliminary test, which will give us guidance in rapidly eliminating the poorer cultures and concentrating on the purification of the more desirable and less variable ones of the lot.

2. *Type Maintenance and Study Plot.*—All the cultures in the yield test will be planted separately in rows so as to give at least 100 plants. Each plant in each culture will be studied in detail regarding its various characters. Roguing will be done where required. Self-pollinated seed will be obtained in each culture from desirable and homogeneous plants.

3. *Individual Plant Selection Studies.*—A plant-to-plant study will be made on the progeny of about 129 single-plant selections made on the bases of different characters like high yield and mostly female spike, early flowering, monospikedness, non-spiny fruit, small seed, high oil percentage, etc.

4. *New Acquisitions.*—Fresh samples of castor collected from the Districts of our Dominions will be planted and studied individually. Desirable single-plant selections will be isolated from the more promising samples.

5. *The Genetics of Castor.*—(a) This work has been started in the season just over. The material has been classified into a number of groups based on various characters like stem colour, kinds of bloom, nature of

fruiting spikes, etc. Efforts at purification of these groups will be continued.

(b) An experiment will be laid out for the study of natural cross-pollination in castor.

(c) Possibility of parthenogenesis in castor will be investigated.

(d) Chances of castor pollen getting through muslin bags used for "selfing" will be determined.

6. *District Work*.—About 10 of our best single-plant cultures will be compared with the local for seed yield after Fisher's Method of Randomized Blocks. 6-10 replications will be used depending upon soil variability and the amount of land available. This test will be run on all the Government Farms.

7. *Pot Culture Work*.—It is hoped that this shed will be ready and available by the end of the present year 1937. If so, some of the Genetics work will be conducted therein, especially problems, which can be studied in the seedling stage. Studies of the inflorescence of castor can also be conducted.

8. *Rabi Work*.—We have in our collection a few samples of *rabi* castor. These will be studied in the next *rabi*.

*Kharif* castor has also been successfully grown in the *rabi* season at Himayet Sagar in the heavy black soil. Three irrigations were given in the past years, but, during the season, which will soon end, only one irrigation was given immediately after planting. The standing crop is beautiful. The cold season also provides a splendid chance of eliminating cultures, susceptible to the attack of jassids, which are profuse at that time. Hence, some of our promising cultures grown in the *kharif* will also be tried out in the *rabi*.

## II. RICE IMPROVEMENT.

1. *General*.—The Yield tests mentioned below will be conducted after Fisher's Method of Randomized Blocks, using three to five replications.

## 2. *Comparative Yield Tests:*

### (i) *Test No. 1.*

#### \*25 *Early Maturity Single-Plant Cultures.*

(i) 1 Fine Grained.

(ii) 21 Medium Grained.

(iii) 3 Coarse Grained.

263 will be used as the standard.

### (ii) *Test No. 2.*

#### \*23 *Intermediate Maturing Cultures.*

(i) 1 Fine Grained.

(ii) 12 Medium Grained.

(iii) 10 Coarse Grained.

541 will be used as the standard.

### (iii) *Test No. 3.*

#### 13 *Late Maturing Cultures.*

(i) 2 Fine Grained.

(ii) 4 Medium Grained.

(iii) 7 Coarse Grained.

80 will be used as the standard.

### (iv) *Test No. 4.*

#### 19 *Most Promising Early Maturing Single-Plant Cultures.*

(i) 2 Fine Grained.

(ii) 13 Medium Grained.

(iii) 4 Coarse Grained.

These will be tested against our standards 263 and 504.

### (v) *Test No. 5.*

#### 18 *Most Promising Intermediate Maturing Single-Plant Cultures.*

(i) 1 Fine Grained.

(ii) 9 Medium Grained.

(iii) 8 Coarse Grained.

Our No. 541 will be used as the standard.

(vi) *Test No. 6.*

12 *Most Promising Late Maturing Single-Plant Cultures.*

(i) 1 Fine Grained.

(ii) 4 Medium Grained.

(iii) 7 Coarse Grained.

Our 80 will be used as the standard.

(vii) *Study of Progeny of 31 Single-Plant Selections from the Marathwada.*

As the result of the preliminary Yield Test No. 7 of the last crop-year only 8 of these were retained. Their progeny are under study this *tabi*. After harvest the best and most homogeneous of these 8 will be retained for further study. All of the 8 are fine grained except one.

3. *Type Maintenance Plot.*—This plot will carry the cultures used in the several yield tests. Separate rows of each culture will be planted so as to give 100 plants, which will be studied individually to see that they conform to type. About 5-10 typical plants will be self-pollinated in each culture.

4. *Individual Plant Selections.*—(i) The progeny of 17 individual plant selections will be studied each plant by itself for the various characters with the idea of maintaining the best for further work. Individual plant yields will be taken.

(ii) The progeny of 45 new individual plant selections will be kept under similar study.

(iii) 27 samples of G.E.B. 24, obtained in the last *abi* (1345-46 F.) through the courtesy of the Deputy-Director of the East Telengana Division, were separately sown and studied. 63 individual plants of promise have been isolated and will be further studied in the coming season (1346-47 F.).

(iv) 4 new types (segregates) have been isolated from our old cultures 263 and 539. These will be grown each by itself and studied plant by plant.

(v) Five old single-plant cultures have been found to be heterogeneous. These are Nos. 24, 207, 406 and 427. A plant-to-plant study will be made.

5. *New Acquisitions*.—A new Amritsari (fine, scented, table rice) sample has been acquired through the courtesy of the well-known local grain merchants, Messrs. G. Ganeshmul. It is under study this *tabi* and promising individual plant selections will be made from it, with a view to isolating and establishing valuable strains.

## B. PARBHANI BRANCH.

### 1. *Comparative Yield Tests*.

#### I. WHEAT IMPROVEMENT.

(i) *Test No. 1*.—This test will be in its second year. 7 best single-plant cultures have been tested this year for grain yield against Pusa No. 4 and Local Wheat in the Economic Botanist's Section. Fisher's Randomized Blocks with ten replications will be used.

(ii) *Test No. 2*.—The more desirable of the 9 single-plant cultures in the Yield Test No. 2 along with some of the best cultures obtained from the 11 in the Yield Test No. 3 of the present season (1345-46 F.) will be tested for grain yield against Pusa No. 4 and Local wheat by means of Fisher's Randomized Blocks. About six replications will be used.

(iii) *Test No. 3*.—18 new single-plant cultures evolved from the samples of wheat, collected from the District of Aurangabad two years ago, will be tried out for grain yield against Pusa 4 and Local wheat. Fisher's Method of Randomized Blocks with four replications will be employed.

#### 2. *Type Maintenance Plot*.

The single-plant cultures used in the yield tests will be planted separately so as to give a final stand of about 200 plants in each culture. A plant-to-plant study will be made so as to see that the type concerned is maintained. Typical plants will be selected for seed for the following year.

#### 3. *Individual Plant Selection Studies*.

The progeny of 15 new individual plant selections will be planted by themselves and studied in detail. The more promising and homogeneous of them will be retained for further work.

#### 4. *The Study of Crosses.*

The original cross Ar. 472 A-10×Bom. 224 is now in the F<sub>4</sub> generation. 30 promising families have been isolated. They will be studied individually in detail.

#### 5. *New Acquisitions.*

Newly acquired samples will be grown and studied.

#### 6. *Release of Promising Cultures to Government Farms.*

(i) Six of the 7 single-plant cultures occurring in Yield Test No. 1 are being tried out by the Deputy-Directors, Godaveri and Karnatik Divisions, against Pusa 4 and Local wheat at the Main Agricultural Experiment Stations at Parbhani and Raichur respectively. This test will be repeated with the same technique.

(ii) It is further proposed, depending upon the availability of sufficient seed, to lay down the same experiment under the concerned Deputy-Directors also at Himayet Sagar and Warangal, where too, wheat varietal tests are being conducted, each season.

### II. KHARIF JOWAR IMPROVEMENT.

1. *Comparative Yield Test.*—8 single-plant cultures of *kharif* jowar will be compared for grain and “*kadbi*” yield against the local kind. 10-12 replications will be used after Fisher’s Method of Randomized Blocks. This experiment will be in its third year.

2. *Type Maintenance Plot.*—These 8 single-plant cultures will be planted by themselves in separate rows, so as to give a final stand of about 150 plants. A plant-to-plant study will be made to determine the purity of each culture and “selfed” seed will be produced from typical plants.

3. *Individual Plant Selection Studies.*—A detailed study of the progeny of promising single-plant selections made from the village samples of *kharif* jowar grown in 1344-45 F. will be continued.

4. *Release of Promising Cultures to Government Farms.*—When the results of this season’s work have become available in a couple of months, it may be possible to release about 4 promising cultures to the Deputy-Director of Agriculture, Godaveri Division, for being

tested against local *kharif* jowar for the yield of grain and "*kadbi*" at Parbhani. If so, a plan will be made out and handed to the Deputy-Director as was done this season for wheat. It is not expected that sufficient seed will be available at present for farms in the other Divisions.

### III. RABI JOWAR IMPROVEMENT.

1. *Comparative Yield Test*.—11 single-plant cultures of *rabi* jowar will be tried out for grain and "*kadbi*" yield against the local (*dagdi*) in Fisher's Randomized Blocks, having ten replications. This will be the third year of the test.

2. *Type Maintenance Plot*.—The 11 single-plant cultures will be planted separately, so as to have a final stand of about 150 plants. Each plant in each culture will be studied and self-pollinated seed will be obtained from typical plants in every culture.

3. *New Acquisitions*.—Samples of *rabi* jowar newly acquired will be grown and studied. Individual plants will be selected from the more desirable samples for the establishment of new families.

4. *Release of Promising Cultures to Government Farms*.—Four of the single-plant cultures occurring in the Comparative Yield Test are being tested for grain and "*kadbi*" yield by the Deputy-Director of Agriculture, Godaveri Division, at Parbhani. The standard used is local *rabi* jowar. This test will be repeated as in the current year. Depending upon the availability of seed the same experiment may be tried out in the other three Divisions.

(Sd.) A. B. H. KHOORSHID,  
ECONOMIC BOTANIST,  
*H.E.H. the Nizam's Government.*



*Annual Report of the Agricultural Chemist, H.E.H. the  
Nizam's Government Main Farm, Himayatsagar for  
1345-46 F. (1936-37 A.D.).*

During the period under report, I was on tour for 82 days, and went outside the State twice for a period of 21 days, once for 9 days to Simla and a second time for 12 days to Delhi and Lucknow, to attend meetings of the Soils Science Committee of the Imperial Council of Agricultural Research, and for attending the All-India Agricultural and Industrial Exhibition, at Lucknow.

Mr. A. D. Desai, Assistant Chemist was deputed to conduct the sugarcane juice analysis, at Rudrur, from 22nd Azur 1346 F. (27th Nov. 1936); but due to ill-health, he was granted privilege leave from 29th Bahman to 10th Ardibehisht 1346 F. (from 1st January to 14th March, 1937). Mr. A. D. Desai left for Aberdeen, Scotland, for higher studies and research in soil science, availing two years' study leave, from 11th Ardibehisht 1346 Fasli (15th March 1937).

Mr. Syed Hafizuddin, a probationer in the Department was attached to this Section, to work in place of Mr. Desai, and he was deputed at Rudrur Experimental Farm, (Nizamabad District), for conducting sugarcane juice analysis from 27th Bahman to 10th Thir 1346 F. (30th December 1936 to 15th May 1937).

Mr. S. M. J. Razvi, a probationer in the Department and attached to this Section, continued to work in this Section all through the period under report.

During this period, the staff of this Section was mainly engaged in routine analytical work of the Agricultural Department, and this work is rapidly increasing, as will be seen from the number of samples analysed during the last three years, which are as follows:—

Year			No. of analyses.
1934-35	..	..	884
<u>1343-44 F.</u>			
1935-36	..	..	2,794
<u>1344-45 F.</u>			
1936-37	..	..	3,622
<u>1345-46 F.</u>			

This year's analyses are classified as under:—

I.	<i>Miscellaneous</i>	..	..	89
	1. Soils	..	..	34
	2. Waters	..	..	32
	3. Manures and Fertilizers.			21
	4. Figs and Beet roots for sugar.	..	..	4
II.	<i>Sugarcane Juice Analyses</i>	..	..	2,097
	1. At Himayatsagar Main Farm	..	..	1,344
	2. At Rudrur Experimental Farm	..	..	753
III.	<i>'Gul' Samples</i>	..	..	187
IV.	<i>Castor Seed Samples for Oil Analysis</i>			1,249
<hr/> Total ..				<hr/> 3,622 <hr/>

#### SUGARCANE JUICE ANALYSIS.

1. *Himayatsagar*.—Sugarcane juice analysis of the cane varieties grown on the Main Farm, Himayatsagar, 76 New Crop and 67 of Ratoons were analysed weekly, from middle of November, 1936 to the end of January 1937, (Dai to Isfandar 1346 F.), and the analysis of these is shown in Statements Nos. 1 and 2.

From the juice analysis of the New Crop, the cane varieties may be grouped into Early, Midlate and Late as follows:—

*Early (Over 18.0 Brix by mid-November).*

Co. 205, 270, 357, 381, 421, 433, 434, 435, 511, 513, 517 and 518.—P.O.J. 2725, 2878 and H.M. 608.

*Midlate (Over 18.0 Brix. by end of November to the Middle of December, 1936).*

Co. 213, 244, 281, 290, 299, 313, 326, 331, 351, 352, 353, 354, 355, 356, 360, 407, 419, 427, 436, 437, 509 and 519.—H.M. 613 and P.O.J. 2714, 2883 and E.K. 28.

*Late (Over 18.0 Brix by end of December 1936.)*

Co. 423, 426, 432,—H.M. 320, 544, and 544 Striped, 617 and 627.

The Ratoons may be similarly grouped into Early and Midlate as follows:—

*Early (Over 18.0 Brix by Mid-November, 1936).*

Co. 270, 281, 285, 299, 301, 313, 331, 351, 352, 353, 355, 357, 381, 401, 403, 404, 407, 408, 411, 412, 413, 416, 417, 419, 421, 427, 429, 432, 433, 434, 435, 437, 438, 509, 511, 517 and 518.—P.O.J. 2714, 2725, 2878 and 2883.

*Midlate (Over 18.0 Brix by end of November to Middle of December 1936.)*

Co. 205, 213, 219, 223, 243, 244, 290, 300, 326, 356, 360, 400, 402, 423, 426, 436, 513, 519.—H.M. 320, 544, 544 Striped, Local Red.

From the analysis of New Crop, (Statement No. 1), it will be seen that the following 39 varieties had an average brix value of 18 with over 80 per cent. purity, for the whole period of analysis:—

Co. 205, 213, 244, 270, 281, 299, 313, 326, 331, 351, 352, 353, 355, 356, 357, 381, 407, 421, 427, 432, 433, 434, 435, 437, 509, 511, 513, 517, 518 and 519. H.M. 608. P.O.J. 2714, 2725, 2878 and 2883. Fiji B., D. 109 and E.K. 28.

And the following 24 varieties are found to have an average brix value of 19 with over 80 per cent. purity:—

Co. 205, 270, 281, 299, 351, 352, 355, 356, 357, 381, 407, 433, 434, 509, 511, 513, 517, 518, 519. H.M. 608, P.O.J. 2714, 2725, 2878 and 2883.

From the analysis of Ratoons (Statement No. 2), it will be seen that the following 43 varieties had an average brix value of over 20 with over 80 per cent. purity:—

Co. 213, 270, 281, 285, 299, 300, 301, 313, 326, 331, 351, 352, 353, 355, 356, 357, 360, 400, 403, 404, 407, 408, 411, 412, 413, 417, 419, 421, 423, 427, 429, 432, 433, 434, 435, 438, 509, 511, 513, 517 and 519. P.O.J. 2878 and 2883.

And the following 16 varieties had an average brix value of over 20 with about 85 per cent. purity:—

Co. 270, 281, 299, 313, 351, 352, 353, 355, 356, 357, 407, 417, 427, 438, 517 and 519.

From the results of line tests for these varieties (New Crop), carried out by the Farm, the order of their ranking, yield, average brix and purity for the period under test are as follows, (for the first twenty):—

Ranking	Variety	Calculated yield per acre in lbs.	AVERAGE FOR PERIOD UNDER TEST	
			Brix	Purity
1	Co. 419 ..	1,08,785	17.1	78.9
2	„ 434 ..	95,997	19.1	85.6
3	„ 511 ..	92,004	19.3	84.4
4	„ 423 ..	84,645	17.0	80.8
5	„ 426 ..	88,506	17.5	81.3
6	„ 509 ..	81,312	19.2	83.0
7	„ 421 ..	80,817	18.8	80.5
8	„ 432 ..	79,332	18.6	82.2
9	„ 244 ..	79,167	18.2	83.0
10	„ 513 ..	77,167	19.8	82.1
11	„ 437 ..	76,791	18.8	83.0
12	„ 433 ..	76,197	19.5	84.6
13	„ 413 ..	74,481	15.3	77.7
14	„ 355 ..	73,722	19.1	83.4
15	„ 429 ..	71,478	17.3	80.5
16	„ 290 ..	71,148	16.2	78.6
17	„ 301 ..	68,970	16.8	80.3
18	„ 408 ..	68,904	16.9	82.9
19	„ 436 ..	67,914	17.7	82.4
20	„ 519 ..	67,353	19.9	83.3

## FIELD TRIAL OF RATOON CROPS.

The following Ratoons were grown in randomized blocks of 1/30 acre and replicated six times; and their ranking, yield, average brix and purity for the period under test were as follows:—

Ranking	Variety	Calculated yield per acre in lbs.	AVERAGE FOR PERIOD UNDER TEST	
			Brix	Purity
1	Co 213 ..	91,920	20.6	85.6
2	„ 290 ..	84,180	91.2	83.1
3	„ 223 ..	74,970	19.1	86.0
4	„ 331 ..	64,530	20.2	86.1
5	„ 281 ..	64,420	22.4	80.3
6	„ 300 ..	62,190	20.2	85.4
7	„ 313 ..	56,700	21.3	86.1
8	E.K. 23 ..	46,650	16.6	77.5
9	P.O.J. 2714 ..	46,290	19.9	83.2
10	H.M. 544 ..	40,020	17.2	82.3
11	P.O.J. 2878 ..	38,070	20.2	82.7
12	H. M. 326 ..	34,920	17.3	77.6

From a comparison of the statements 1 and 2, it will be seen that the Ratoons matured earlier by over a fortnight, and also they had a richer and purer juice. The brix of the Ratoons, on the whole, was richer by at least  $1\frac{1}{2}$  to 2 per cent., and the yield of cane of the Ratoon crops was also quite satisfactory. Manuring for the New crop and for the Ratoons was same, as forty maunds of castor-cake was applied in two doses without addition of any mineral fertilizers. The New crop, however, had a green manure crop (Sunhemp) ploughed under, prior to the planting of cane. The cane yields for both the New crop and Ratoons could be considered as satisfactory.

The New crop series are being grown in the same way for the 1346-47 F. crop; and only from results of several years, we can conclude regarding the most suitable varieties for this part of the country.

Last year, i.e., 1344-45 F. (1935-1936), the ranking for the twelve varieties, tried on field scale were as follows:—

(1) Co. 213, (2) Co. 223, (3) Co. 290, (4) Co. 331, (5) Co. 281, (6) Co. 300, (7) E.K. 28, (8) Co. 313, (9) P.O.J. 2714, (10) P.O.J. 2878, (11) H.M. 544, (12) H.M. 320.

During 1343-44 Fasli, (1934-1935), the ranking of eight varieties tried on field scale were as follows:—

(1) Co. 213, (2) Co. 223, (3) Co. 290, (4) P.O.J. 2878, (5) Co. 281, (6) P.O.J. 2714, (7) E.K. 28, (8) H.M. 544.

Some of the newer varieties, tried this year, fared better than the varieties Co. 213, 223 and 290, these being 16th (in yield) for Co. 290 and far lower for the others.

#### CANE JUICE ANALYSIS AT RUDRUR EXPERIMENTAL FARM.

In Statement No. 3 are given the results of analysis of the different varieties of sugarcane grown on the Experimental Farm, Rudrur, Nizamabad district, from 29th Azar to 28th Khurdad 1346 F. (3rd November 1936 to 2nd May 1937).

From Statement No. 3, it will be seen that the following 17 varieties had an average of over 19 brix and 80 per cent. purity:—

Co. 513, 427, 413, 360, 356, 355, 353, 352, 351, 313, 290, 281, 213. P.O.J. 2878, 2725, 2714, E.K. 28.

Of these the following seven varieties had an average of over 20 brix, for the period under test:—

Co. 419, 360, 355, 353, P.O.J. 2878, 2725 and 2714.

From line tests conducted on the Farm, the yields per acre of cane in lbs. ranking, average brix and purity

of the first sixteen varieties are given in the following statement:—

Rank- ing	Variety	Calculated yield per acre in lbs.	AVERAGE FOR PERIOD UNDER TEST			
			Brix	Glucose per cent.	Purity per cent.	Alkali- nity in ash 100 grms. of juice in C.C.N. acid
1	P.O.J. 2883	92,400	18.9	1.07	87.3	0.57
2	Co. 331 ..	58,905	18.8	0.21	86.7	0.76
3	.. 313 ..	58,493	19.7	0.39	86.8	0.74
4	.. 356 ..	56,925	19.3	0.46	86.4	0.95
5	.. 423 ..	56,513	18.8	0.51	87.7	0.47
6	.. 213 ..	53,625	19.6	0.17	87.2	0.99
7	.. 357 ..	53,625	17.9	0.41	90.0	0.72
8	.. 301 ..	52,800	18.6	0.38	85.5	0.88
9	.. 300 ..	52,300	18.1	0.66	85.6	0.57
10	.. 513 ..	51,810	18.9	0.38	86.7	0.61
11	.. 417 ..	51,480	18.1	0.87	86.7	0.58
12	.. 426 ..	48,840	17.4	0.56	87.4	0.48
13	.. 281 ..	47,025	20.4	0.23	86.3	0.87
14	.. 355 ..	46,513	20.0	0.25	87.0	0.81
15	.. 290 ..	43,560	19.0	0.26	88.4	0.59
16	.. 223 ..	40,343	18.9	0.66	86.8	0.66

For these tests, four randomized lines for each variety were planted; the soil variation in this plot was seen to be too much and four lines of each were not sufficient to account for error due to soil variation, and hence the results can be said to be inconclusive; and it is

suggested that the lines for each variety should be increased to ten to minimise this error. However, it might safely be concluded that P.O.J. 2883 gave the maximum yields for any variety, and only in two lines was the crop good and uniform, while in one line the crop was almost nil and in the other only 1/5th of the crop in first two lines; taking the average for all four lines, and calculating the yield per acre, we got 92,400 lbs. of cane. Next to P.O.J. 2883, in yield is found to be Co. 331 with an yield of 58,905 lbs. of cane, while yields of Co. 313, 356, and 423 are quite close to those of Co. 331.

The cane crop was green manured prior to its planting, and 40 maunds of castor-cake were applied in two equal doses, without addition of any mineral fertilizers. The yields of cane might be considered satisfactory.

#### MANURIAL TESTS.

The results of the analysis of canes from the Manurial Test Plots are given in Statement No. 4, together with cane yields.

It will be seen from Statement No. 4, that higher manuring gave higher yields; but the results do not seem as convincing as they should, because of the ununiformity of the soils, variation from plot to plot being far too much to be covered by the four replications.

From the results of cane juice analysis it will be seen that the maturity of cane in higher manured plots was a bit delayed and that glucose content of the juice in mature crops was negligible, i.e., in February and March, 1937 as compared to that in November, December 1936 and January 1937; and that the juice was purer in the mature crop.



## FIBRE CONTENT OF SUGARCANE VARIETIES.

Fibre content was determined in some of the sugarcane varieties, and the results are given below:—

Serial No.	Variety	MARCH-APRIL					
		3rd week	1st week	2nd week	3rd week	4th week	
1	Co. 513	..	..	.	20.5	..	20.7
2	„ 426	..	..	..	..	..	17.5
3	„ 423	..	..	..	..	..	13.4
4	„ 419	..	..	18.3	15.1	..	..
5	„ 357	..	..	..	19.8	..	..
6	„ 356	..	23.5	20.9	18.9	..	..
7	„ 355	..	..	..	17.8	..	..
8	„ 352	..	..	..	15.8	..	..
9	„ 331	..	..	..	..	..	16.5
10	„ 301	..	..	..	..	17.3	..
11	„ 300	..	..	..	..	..	17.0
12	„ 290	..	..	16.8	18.3	..	..
13	„ 281	..	..	12.0	..	..	..
14	„ 223	..	..	20.6	..	..	..
15	„ 213	..	..	..	..	..	17.2
16	P.O.J. 2878	..	..	16.8	..	..	..

Due to lack of time, Fibre content in other varieties was not determined. During the next season, attempt will be made to determine fibre content of all the canes under trial.

## “GUL” ANALYSIS.

In Statement No. 5 are given the results of analysis of ‘gul’ samples, from Parbhani, Rudrur and Himayatsagar Farms. The alkalinity in Himayatsagar Farm

samples is generally much higher than in the Rudrur and Parbhani samples. The soils and waters used for irrigation were analysed, both at Himayatsagar and Rudrur Farms, and the results of these analyses are given below:—

*Soluble salts in Rudrur chelka soils*

Serial No.	No. of Plots	PARTS PER 100,000				
		Total salts	CO <sub>3</sub>	HCO <sub>3</sub>	Cl	SO <sub>4</sub>
1	A5c ..	76	..	42.7	3.5	..
2	C11 ..	62	..	30.5	7.0	..
3	A1a ..	136	..	73.2	17.5	..
4	A1c ..	80	..	48.8	7.0	..
5	A1b ..	80	..	48.8	10.5	..
6	A5b ..	124	..	73.2	7.0	..
7	C1o ..	78	..	48.8	3.5	..
8	A2bc ..	126	..	73.2	3.5	..
9	A2a ..	68	..	30.5	7.0	..
10	A2bc ..	126	..	73.2	10.5	..

*Soluble salts in Himayatsagar Cane soils.*

Serial No.	No. of Plots	PARTS PER 100,000				
		Total salts	CO <sub>3</sub>	HCO <sub>3</sub>	Cl	SO <sub>4</sub>
1	A ..	110	..	73.2	3.5	..
2	B ..	120	..	73.2	7.0	..
3	C ..	114	..	67.1	5.25	..
4	D ..	68	..	30.5	5.25	..
5	E ..	80	..	42.7	7.0	..
6	F ..	130	..	79.3	5.25	..

*Salts in water.*

Serial No.	Location	PARTS PER 100,000				
		Total salts	CO <sub>3</sub>	HCO <sub>3</sub>	Cl	SO <sub>4</sub>
1	Rudrur Farm ..	14.2	3.2	5.4	1.05	..
2	Rudrur outside Farm ..	13.1	..	8.2	1.05	..
3	Near Varni, Nizamabad District ..	11.8	2.7	5.4	0.70	..
4	Himayatsagar Farm ..	21.1	1.8	1.2	1.05	..

It will be seen from the above analyses that Himayatsagar waters contain from 50 to 60 per cent. more total salts than the Nizamsagar canal waters, and that the soluble salts in the soil seem to be roughly same, although the Himayatsagar black soils where cane was grown seem to be somewhat richer in soluble salts than the Chelka soil of Rudrur Farm. Waters in both places contain some alkali salts, and the soils also contain similar salts, and hence the Coimbatore canes grown in these soils and irrigated by waters containing similar salts as present in the soils seem to absorb the salt which is reflected in the alkalinity of 'gul.' From the Statement No. 5 it will be seen that alkalinity in 'gul' samples from Himayatsagar is definitely higher than those in Rudrur samples, and hence the distinct saltish taste in many of the Himayatsagar 'gul' samples. The 'gul' prepared from Ratoon cane at Himayatsagar Farm, on the other hand, is not so high in alkalinity, although a few samples in these too have high alkalinity and saltishness.

Saltishness in 'gul' is due to the salts absorbed by the canes from the soils and from irrigated waters. By continued growing of cane in the same plot, it was observed that the saltishness in 'gul' decreases due to decrease in the salt content of soil and when the soil is freed from the salts, the canes absorb the salts contained in the irrigated waters only, which will not be so noticeable in the 'gul' samples. Himayatsagar 'gul' will continue to be somewhat saltish because of the salts

present in the water used for irrigating the canes and in the soils, as the crop is rotated and not continuously grown in the same area.

#### ANALYSIS OF CASTOR SEEDS.

1249 samples of castor seed were analysed for oil content during the period under report, and the results were sent to the Economic Botanist. As this work is increasing, and as the results are required by the Economic Botanist before June, we have developed a rapid technique which gives quite consistent and reliable results. This will be followed from next season, and this is briefly as follows:—

8-10 Gms. of castor seed is ground to fine paste and completely transferred to a wad of cotton, weighing about one Grm., and rolled lightly; over this a filter paper of the required size is wrapped and tied with string. This packet is transferred to the extractor and connected up to the Soxlet and required quantity of ether sulphuric is added. The temperature of the water in the water bath is kept constant at 60°C and the extraction is continued to exactly three hours, when the packet from the extractor is withdrawn and ether recovered. The flask after most of the ether had evaporated, is heated for two hours at 100°C in a Hot air oven and when cooled transferred to Dessicator. The flask is weighed and oil per cent. calculated. The weight of seed taken for analysis, quantity of cotton used in making the packet, compactness of packet, temperature of water in water-bath, duration of extraction, temperature and duration of heating the flasks, all these are to be kept constant, when the results are found to be quite uniform and reliable.

In concluding, I should like to express my gratitude for the staff (Technical and Clerical) who have wholeheartedly co-operated with me in the conduct of the work of this Section, specially, as we had, as a rule, to work overtime to cope up with the increased work.

#### OFFICE.

During the period under report, the accounts of this Section are maintained to my entire satisfaction by the

clerk and “Khazanedar” Mr. Vaman Rao, who single-handed as he is, has been doing the clerical, typing and accounts work of this Section.

(Sd.) P. G. KRISHNA,  
AGRICULTURAL CHEMIST,  
*H.E.H. the Nizam's Government.*

6 to January 1937.)  
Abs

Serial No.	UNE		Remarks
	Varie	X	
		c Purity	
1	Co.	208	..
2	"	218	..
3	"	218	..
4	"	228	..
5	"	248	..
6	"	244	..
7	"	270	..
8	"	281	..
9	"	284	..
10	"	290	..
11	"	299	..
12	"	300	..
13	"	301	..
14	"	311	..
15	"	320	..
16	"	331	..
17	"	351	..
18	"	35	..
19	"	35	..
20	"	35	..

## STATEMENT

## ABSTRACT STATEMENT OF RESULTS OF WEEKLY JUICE

*Grown at the Experimental Farm, Radhrur, Nizamabad*

## NOVEMBER

Serial No.	Variety	I				II		III		IV	
		Brix	Purity per cent.	Glucose per cent.	Alkalinity	Brix	Purity per cent.	Brix	Purity per cent.	Brix	Purity per cent.
1	Co. 513	16.8	75.5	1.1	0.7	17.1	83.1	18.8	85.7	19.3	86.1
2	" 127	17.4	80.2	0.8	0.7	18.8	86.0	20.5	84.1	18.2	87.2
3	" 426	15.2	77.4	1.3	0.5	16.9	85.9	16.8	86.3	17.6	87.7
4	" 423	15.5	75.0	1.3	0.6	16.9	86.5	17.6	86.5	18.9	89.0
5	" 419	17.3	79.1	1.2	1.0	18.5	86.7	18.3	89.0	20.0	86.6
6	" 417	13.3	72.1	1.6	0.6	15.8	83.6	16.2	86.1	17.8	86.7
7	" 413	15.0	79.9	0.8	0.6	18.3	87.7	17.0	86.0	20.1	85.2
8	" 411	18.8	79.6	1.1	0.7	19.6	88.4	19.2	87.1	18.2	85.8
9	" 408	17.4	81.5	0.9	0.7	17.4	86.0	16.8	86.3	18.2	86.7
10	" 404	16.5	79.3	1.2	0.6	17.0	85.6	16.0	87.7	18.4	87.3
11	" 402	14.7	77.8	1.1	0.6	14.7	86.4	16.6	87.0	15.7	86.2
12	" 369	17.5	78.4	1.1	0.7	19.9	84.7	19.7	87.9	20.0	86.5
13	" 357	17.6	78.4	0.8	1.2	18.5	86.9	17.9	85.7	17.0	84.0
14	" 356	16.3	77.2	1.0	1.1	17.9	83.6	17.6	85.2	17.6	84.2
15	" 355	17.9	80.5	0.6	1.4	18.3	91.3	18.0	83.5	19.4	87.0
16	" 353	19.0	82.5	0.6	0.9	18.6	83.7	19.0	84.4	19.8	85.9
17	" 352	18.5	84.4	0.5	0.8	17.5	85.1	20.0	85.2	17.0	85.4
18	" 351	17.9	81.1	0.7	1.1	16.4	82.6	20.2	85.5	17.1	85.0
19	" 331	17.8	81.5	0.5	1.1	18.5	85.4	18.8	85.4	18.5	87.1
20	" 313	18.0	81.1	0.8	1.1	17.6	84.2	18.6	86.4	19.2	85.9
21	" 301	17.3	79.4	0.7	0.8	17.2	84.5	18.0	83.9	17.9	87.8
22	" 300	18.4	80.1	1.1	0.8	18.8	85.3	19.5	86.6	17.7	85.0
23	" 290	17.5	80.5	0.7	0.7	17.3	85.4	18.2	85.7	19.0	87.2
24	" 281	17.9	82.0	0.6	0.8	19.9	87.0	21.4	86.8	20.6	87.2
25	" 223	16.9	80.0	0.8	0.5	16.5	84.6	17.4	84.0	16.9	84.5
26	" 213	17.8	81.5	0.5	1.1	18.6	87.1	18.6	86.4	19.1	85.0
27	P.O.J. 2883	14.8	75.1	1.8	0.6	16.3	86.9	17.7	85.8	18.4	88.8
28	" 2878	17.7	76.3	1.4	0.6	19.2	87.6	20.1	86.3	20.9	87.7
29	" 2725	16.4	76.5	1.0	0.7	17.7	86.8	20.3	75.7	19.5	86.8
30	" 2714	19.7	81.9	0.8	0.8	19.9	86.8	16.7	86.1	20.8	86.3
31	E. K 28	16.0	78.1	1.2	0.7	16.7	85.4	17.7	84.7	17.4	87.3
32	H.M. 544	13.5	73.3	1.8	0.6	16.0	88.7	14.9	86.7	15.8	88.4
33	H.M. 544 Str.	15.0	75.0	1.6	0.3	16.2	85.2	16.8	86.6	17.3	86.7
34	H. M. 320	14.6	77.0	1.5	0.5	17.5	85.3	19.1	87.8	18.5	88.4
35	Piji B.	12.4	67.3	2.3	0.5	15.0	84.2	16.3	86.2	15.8	86.8
36	D. 109	15.8	76.6	1.5	0.7	17.1	86.6	17.4	87.5	18.8	86.8

No. 3.

## ANALYSIS OF SUGARCANE VARIETIES (NEW CROP).

*District for the year 1345-46 F. (1936-37).*

DECEMBER									
V				VI		VII		VIII	
Brix	Purity Per cent.	Glucose Per cent.	Alkali- nity	Brix	Purity Per cent.	Brix	Purity Per cent.	Brix	Purity Per cent.
19.4	79.9	0.5	1.1	20.1	85.8	19.5	83.3	20.4	83.4
19.4	85.9	0.7	0.9	21.6	84.1	21.6	87.0	20.2	87.8
18.6	82.6	0.8	0.5	18.9	85.7	19.3	87.7	19.0	95.9
18.2	79.3	0.9	0.6	19.2	85.9	19.8	86.1	19.5	90.4
20.5	85.2	0.7	1.1	19.7	89.9	20.5	84.3	21.7	91.3
15.5	76.9	1.6	0.5	15.3	82.5	16.6	85.9	17.6	96.0
20.4	87.1	0.5	1.0	21.7	83.4	21.0	84.9	21.1	93.1
19.6	66.5	0.9	0.8	18.2	85.6	19.0	85.8	19.3	86.3
19.6	85.7	0.7	0.4	19.6	86.4	19.7	85.9	18.7	82.8
17.0	79.4	1.3	0.5	18.2	85.8	16.8	86.0	19.4	91.4
15.0	88.9	0.9	0.6	14.1	85.4	15.1	85.4	16.1	92.3
20.3	84.0	0.5	0.4	19.7	83.8	20.7	86.9	20.8	83.0
20.4	78.5	0.5	1.0	19.0	86.2	20.2	85.5	19.9	87.0
19.4	77.8	0.7	0.8	17.9	86.1	18.7	84.1	20.9	76.6
19.6	74.8	0.6	1.2	20.3	86.5	21.2	84.2	20.9	85.3
20.1	80.6	0.6	1.4	20.7	87.3	20.6	83.9	19.2	82.9
20.1	75.3	0.5	0.8	21.1	88.6	18.5	85.8	18.9	86.0
19.1	90.4	0.4	0.7	19.2	82.6	18.5	85.1	20.2	84.9
19.7	79.8	0.5	0.8	19.8	85.9	20.7	86.1	20.5	86.1
19.9	81.9	0.5	1.2	19.9	84.5	20.8	85.7	20.0	84.5
19.1	78.2	0.8	1.1	18.3	84.5	18.2	83.2	17.4	83.0
19.6	74.3	0.6	0.7	20.4	84.7	20.1	83.7	21.4	85.6
18.3	82.7	0.4	0.7	18.6	85.3	20.0	86.0	19.9	86.9
21.8	85.1	0.6	0.8	21.6	89.3	21.1	85.3	21.2	88.5
17.8	80.0	0.9	0.9	18.4	84.5	19.0	87.9	19.2	86.7
19.0	85.6	0.4	1.2	19.0	84.8	21.0	85.7	20.3	87.9
16.4	78.2	1.1	0.3	18.6	87.3	17.0	92.3	21.9	84.8
21.7	83.9	1.2	1.1	21.7	86.2	21.2	88.8	21.3	85.9
20.4	71.8	0.4	1.0	19.4	88.0	20.2	87.9	21.0	85.5
18.0	78.2	1.1	0.9	19.1	82.4	20.4	86.7	23.4	90.8
18.8	76.4	0.7	0.8	19.6	82.9	19.6	86.4	18.4	87.8
15.4	80.5	1.1	0.5	16.4	86.7	18.7	87.4	19.1	89.3
15.8	79.5	1.4	0.6	16.4	88.6	16.7	85.0	18.9	89.7
18.0	79.6	1.1	0.7	17.2	88.1	18.6	88.5	19.6	93.7
16.7	81.3	1.5	0.5	18.5	86.8	19.4	84.6	20.7	75.6
17.7	87.1	0.8	0.7	16.8	85.9	18.1	88.3	20.1	89.6



## STATEMENT

## ABSTRACT STATEMENT OF RESULTS OF WEEKLY JUICE

*Grown at the Experimental Farm, Rudrur, Nizamabad*

## JANUARY

Serial No.	Variety	IX				X		XI		XII	
		Brix	Purity Per cent.	Glucose Per cent.	Alkalinity	Brix	Purity Per cent.	Brix	Purity Per cent.	Brix	Purity Per cent.
1	Co. 513	20.1	89.0	0.4	0.8	20.3	90.5	20.9	88.4	21.3	87.6
2	" 427	18.3	93.6	0.4	0.8	22.2	89.6	19.9	86.4	21.1	87.9
3	" 426	19.4	84.7	0.5	0.7	18.1	89.1	19.9	82.8	18.4	89.2
4	" 423	20.3	87.1	0.2	0.4	20.2	92.0	19.2	87.7	19.6	88.7
5	" 419	21.6	93.2	0.5	0.7	21.7	89.3	21.3	85.3	21.4	89.5
6	" 417	17.7	85.0	1.2	0.5	18.3	93.0	17.9	84.8	19.8	89.3
7	" 413	19.8	82.2	0.3	0.7	20.0	90.0	20.1	85.3	19.0	87.5
8	" 411	19.5	90.9	0.5	0.5	19.3	92.1	19.8	90.8	16.3	82.0
9	" 408	20.0	90.3	0.5	0.3	19.9	90.9	20.5	87.5	20.9	88.6
10	" 404	19.0	88.9	0.8	0.6	19.0	92.5	17.7	87.1	19.0	89.0
11	" 402	16.6	87.2	0.4	0.6	16.3	87.1	16.6	83.4	15.7	86.0
12	" 360	19.9	93.6	0.2	0.6	21.1	84.1	21.0	89.0	21.0	90.0
13	" 357	19.5	92.4	0.4	0.8	13.5	86.7	17.0	83.7	18.1	84.7
14	" 356	18.1	90.5	0.5	1.0	21.7	87.9	18.0	84.3	20.9	85.7
15	" 355	21.1	95.1	0.1	0.6	21.2	83.4	19.2	86.2	21.6	90.4
16	" 353	20.4	85.7	0.2	1.7	19.2	87.3	20.6	86.2	20.0	89.1
17	" 352	20.5	95.0	0.2	0.3	18.9	93.2	20.7	90.4	20.1	84.9
18	" 351	21.3	92.1	0.2	0.8	21.5	87.1	20.5	89.0	21.5	85.8
19	" 331	20.7	88.1	0.1	1.2	20.5	85.5	21.0	88.3	18.3	89.9
20	" 313	21.1	88.4	0.1	0.3	20.0	90.7	20.6	90.0	20.5	82.8
21	" 301	18.2	82.2	0.5	0.9	20.1	88.0	19.0	82.1	19.4	86.6
22	" 300	17.6	85.2	1.0	0.8	20.5	87.0	14.1	86.7	14.7	80.6
23	" 290	19.9	92.1	0.2	0.7	19.7	91.4	21.5	89.2	18.6	90.8
24	" 281	20.8	94.4	0.0	1.1	20.5	91.3	21.3	90.1	21.6	91.3
25	" 223	19.5	87.4	0.8	0.9	19.9	92.3	18.4	90.1	19.5	86.3
26	" 213	20.3	90.1	0.1	1.2	20.0	92.8	20.9	84.2	20.6	86.9
27	P.O.J. 2883	20.9	90.4	0.3	0.8	21.9	90.2	21.4	92.2	21.0	91.3
28	" 2878	22.8	89.6	0.3	0.8	22.2	92.5	22.1	87.1	22.0	88.6
29	" 2725	21.7	89.6	0.4	0.9	23.5	85.5	23.4	89.3	22.6	89.4
30	" 2714	19.4	90.3	0.5	0.5	22.9	90.1	21.6	88.0	22.2	89.0
31	B. K. 28	19.5	93.2	0.5	0.8	19.5	91.3	21.0	89.1	21.7	90.1
32	H. M. 544	18.7	95.0	0.5	0.5	18.2	94.4	18.4	89.0	19.0	91.6
33	H. M. 544 Str.	19.3	91.3	0.3	0.3	19.2	95.5	19.2	87.0	19.1	85.7
34	H. M. 320	19.0	88.1	0.4	0.5	19.7	92.0	19.8	89.4	19.4	85.7
35	Ptji B.	20.6	93.1	0.6	0.7	20.0	92.8	20.5	86.4	19.0	91.8
36	D. 109	19.8	88.0	0.6	0.7	19.7	94.4	20.9	87.9	19.2	88.7

No. 3.—(contd.)

## ANALYSIS OF SUGARCANE VARIETIES (NEW CROP.)

District for the year 1345-46 F. (1936-37).

FEBRUARY									
XIII				XIV		XV		XVI	
Brix	Purity Per cent.	Glucose Per cent.	Alkali- nity	Brix	Purity Per cent.	Brix	Purity Per cent.	Brix	Purity Per cent.
21.0	86.2	0.2	0.5	20.2	90.5	20.3	87.7	19.4	89.0
20.1	89.4	0.4	0.4	19.5	89.2	17.2	86.7	19.5	89.4
18.3	87.2	0.2	0.3	17.8	88.3	17.5	89.9	18.9	90.0
17.6	87.0	0.2	0.4	19.9	90.0	19.3	87.5	18.2	85.5
21.2	87.7	0.3	0.7	18.5	92.0	21.6	88.8	21.5	90.3
19.6	86.0	0.5	0.8	21.7	88.1	20.4	87.9	17.5	85.0
19.9	89.1	..	0.5	19.8	91.6	19.6	89.0	18.7	89.1
18.9	84.9	0.4	0.5	18.7	88.0	17.8	83.8	13.2	85.1
20.6	89.5	..	0.5	20.1	87.9	19.6	87.4	21.5	90.0
19.9	88.6	0.4	0.6	19.5	89.5	19.6	87.5	21.5	90.3
17.0	85.9	0.7	0.7	16.5	89.3	16.9	88.4	14.8	85.9
20.8	89.3	..	0.5	20.3	90.0	18.1	89.7	20.3	89.4
19.7	83.7	0.2	0.7	18.7	86.4	20.7	89.5	20.2	88.2
18.7	84.1	0.3	1.3	16.8	85.6	20.7	88.7	21.5	88.6
21.4	89.6	..	0.7	20.6	87.0	18.6	87.6	21.0	89.3
20.0	89.4	0.1	0.7	20.1	89.6	19.3	84.8	20.6	88.1
19.3	86.9	0.2	0.3	21.4	89.8	22.3	88.9	22.1	91.0
17.3	85.0	0.2	0.3	18.8	87.3	22.0	86.9	20.9	90.0
19.8	88.7	..	0.4	19.6	87.6	19.0	83.5	17.2	90.9
19.9	85.4	0.2	0.6	20.8	90.7	21.5	85.8	20.2	88.8
19.0	85.6	0.1	1.0	18.4	86.3	19.4	86.7	20.2	90.0
16.1	79.1	1.1	0.3	17.4	85.9	19.5	87.8	19.2	87.7
20.6	87.0	..	0.3	21.0	89.5	20.2	88.9	19.4	89.6
21.8	91.8	..	0.8	21.9	90.1	18.3	90.4	18.0	89.4
19.4	88.0	0.2	0.5	20.3	90.1	18.5	88.0	16.6	88.0
19.9	88.7	..	0.3	19.4	85.9	20.0	85.6	19.7	89.8
..	..	..	..	..	..	..	..	..	..
20.4	88.6	0.1	0.7	22.6	89.4	20.1	86.2	20.6	88.1
20.4	88.1	0.3	0.8	21.7	90.0	19.0	84.8	..	..
22.8	88.9	0.2	0.6	22.1	88.0	20.9	87.3	20.3	87.0
22.5	91.9	0.3	0.2	22.4	89.5	21.1	91.6	20.6	88.1
19.4	86.5	0.4	0.6	18.4	88.0	..	..	..	..
19.1	88.5	0.3	0.5	19.9	90.3	18.9	91.0	18.4	89.6
20.6	89.3	0.2	0.5	19.3	89.0	19.3	87.6	19.1	89.8
19.8	86.7	0.5	0.7	19.4	89.9	..	..	..	..
20.4	86.5	0.3	0.7	20.2	87.4	20.7	89.6	..	..

### STATEMENT

### ABSTRACT STATEMENT OF RESULTS OF WEEKLY JUICE

*Grown at the Experimental Farm, Rudrar, Nizamabad*

MARCH

[illegible]



STATEMENT

RESULTS OF ANALYSIS OF CANE JUICE AND CANE YIELDS FROM

*For the year*

Srl. No.	Variety and Treatment	NOVEMBER				DECEMBER			
		I				II			
		Brix	Purity Per cent.	Glucose Per cent.	Alkalinity	Brix	Purity Per cent.	Glucose Per cent.	Alkalinity
1	Co. 213. Castor-cake 1200 lbs. . . Ammonium Sulphate 75 lbs.	17.7	79.1	0.8	1.3	18.7	83.4	0.6	1.4
2	Co. 213. Castor-cake 1600 lbs. . . Ammonium Sulphate 100 lbs.	18.0	80.8	0.7	0.5	17.2	78.8	0.7	0.6
3	Co. 213. Castor-cake 2000 lbs. . . Ammonium sulphate 125 lbs.	17.4	78.3	0.4	0.9	19.2	76.0	0.5	0.7
4	Co. 213. Castor-cake 2400 lbs. . . Ammonium sulphate 150 lbs.	17.4	78.6	0.6	0.5	18.6	80.3	0.5	0.6

\* Alkalinity in ash of 100 Grms. Juice as N. Acid.

No. 4.

MANURIAL TESTS PLOTS, EXPERIMENTAL FARM, RUDEBUR.

1345-1346 *Fasli*. (1936-1937.)

JANUARY				FEBRUARY				MARCH				Calculated yield of cane per acre in lbs.
III				IV				V				
Brix	Purity per cent.	Glucose per cent.	Alkalinity	Brix	Purity per cent.	Glucose per cent.	Alkalinity	Brix	Purity per cent.	Glucose per cent.	Alkalinity	
20.0	87.2	0.2	1.5	20.2	87.4	0.1	1.4	20.6	84.3	..	0.6	41,110
18.8	78.2	0.9	0.6	19.6	89.0	0.3	0.7	..	..	..	..	48,885
18.8	94.9	0.1	0.5	18.5	82.7	0.4	0.7	..	..	..	..	51,110
17.8	86.6	0.4	0.7	19.1	84.9	0.1	0.8	21.1	89.8	Negligible.	0.6	56,630

## STATEMENT No. 5.

THE RESULTS OF ANALYSIS OF "GUL" SAMPLES, FROM RUDRUR, PARBHANI AND HIMAYET SAGAR

For the year 1945-46 F. (1936-1937).

Srl. Nos.	Sample from	Variety of cane	Description of "gul" samples	Moisture per cent.	Sucrose per cent.	Ash per cent.	Alkalinity in ash from 100 Grms. gul as normal acid	Remarks
1	Parbhani	Co. 213	Dark brown, soft, saltish, burnt flavour	6.032	66.4	4.208	2.10	
2	"	" 223	Dark brown, soft, burnt flavour and saltish	6.458	64.4	3.902	2.90	
3	"	" 290	" " soft, burnt flavour, slightly saltish	4.844	66.0	3.790	350	
4	"	E. K. 28	Brown, slightly hard, sweet, but with slightly burnt taste.	6.692	72.4	2.108	1.80	
5	"	P.O.J. 2878	Dark brown, not so hard, slightly saltish	6.516	70.0	2.780	1.40	
6	"	Local	Brown, hard, sweet	6.710	68.8	3.010	3.20	
7	Rudrur	Co. 213	Brown, hard and sweet	4.896	80.0	2.828	1.50	2400 lbs. castor cake Ams. 150 lbs.
8	"	" 213	Pale brown, slightly hard, crystalline, sweet	4.158	79.2	2.932	3.30	1,600 lbs. C. cake Ams. 100 lbs.
9	"	" 213	Pale brown, hard crystalline, sweet	4.134	80.0	2.826	2.00	200 lbs. C. cake 125 lbs. Ampos.
10	"	" 213	Yellowish brown, soft and sweet	4.836	66.4	3.064	3.00	Varietal test.
11	"	" 213	Pale brown, soft, crystalline, saltish	4.674	77.2	3.288	3.00	1200 lbs. C. cake 75 lbs. Ampos.
12	"	223	Dark brown, soft and sweet	5.528	73.2	2.612	1.10	Varietal Test.
13	"	281	Brown, hard and sweet	3.792	82.8	1.944	1.40	" "
14	"	290	Pale brown soft and sweet	5.572	73.6	2.460	2.70	" "
15	"	300	Pale yellow, hard and sweet	5.508	74.0	2.716	1.80	" "
16	"	301	" brown, soft and sweet	4.632	76.8	2.844	1.40	" "
17	"	313	Yellow, soft and sweet, slightly burnt taste	5.872	66.4	2.766	2.20	" "
18	"	331	Dirty brown, hard and saltish	5.840	72.4	3.522	1.60	" "
19	"	351	Brown, hard and sweet	4.716	77.2	2.604	1.70	" "
20	"	352	Dirty brown, hard, slightly saltish	4.784	76.8	2.220	2.00	" "
21	"	353	Dark brown, not so hard, sweet, burnt flavour	6.744	66.4	2.866	1.80	" "

22	"	355	Reddish brown, hard and sweet	4.972	68.8	2.854	2.80	"
23	"	356	Yellowish brown, hard, slightly saltish	4.374	74.8	2.086	2.40	"
24	"	357	Yellowish brown, hard and sweet	5.316	72.4	2.528	1.20	"
25	"	360	Light brown, hard and sweet	5.592	74.4	2.378	0.80	"
26	"	402	Brown, hard and sweet	5.300	72.8	2.856	2.20	"
27	"	404	Brown, hard and sweet	5.514	74.8	2.064	2.30	"
28	"	408	" " " "	6.722	74.8	2.348	1.80	"
29	"	411	Pale brown, hard, and sweet	4.848	74.8	2.156	1.70	"
30	"	413	Brown, hard crystalline and sweet	3.596	74.4	2.506	1.70	"
31	"	417	Reddish brown, hard and saltish	3.496	72.8	2.440	2.10	"
32	"	419	Pale brown, hard, crystalline and sweet	4.990	75.2	4.026	2.20	"
33	"	423	Brown, hard, crystalline and sweet	6.068	67.2	2.582	2.20	"
34	"	426	Light brown, soft and sweet	5.300	74.0	2.164	1.20	"
35	"	513	" " " " hard, crystalline, sweet	5.064	70.4	3.004	2.40	"
36	"	Fiji. B.	Brown, hard, crystalline and sweet	5.648	68.8	1.864	1.20	"
37	"	E. K. 28	Light brown, slightly hard, sweet	5.696	72.8	1.644	0.60	"
38	"	D. 109	Slightly dark brown, hard crystalline and sweet	5.188	74.8	2.602	1.10	"
39	"	H. N. 320	Light brown, hard and sweet	5.892	70.0	2.222	0.40	"
40	"	H.M. 544	Dark brown, hard and sweet	5.008	71.2	2.668	1.50	"
41	"	Striped	Light brown, hard, crystalline, sweet	6.470	68.0	2.376	0.40	"
42	"	H.M. 544	Brown, hard and sweet	4.166	70.4	2.714	1.40	"
43	"	P.O.J. 2714	Slightly dark brown, sweet, and not very hard	5.928	69.6	2.250	0.60	"
44	"	2725	Hard, crystalline and sweet	5.648	77.2	7.336	0.60	"
45	"	2878	Pale brown, not so hard, sweet	5.522	72.4	2.016	3.00	"
46	"	2883	Pale brown, not very hard, not very sweet	5.684	74.8	2.096	0.70	"
47	"	2883	Reddish brown, not very hard, saltish	6.780	74.4	5.372	6.80	"
48	"	205	Not so hard, reddish brown, crystalline and sour	7.604	74.0	3.602	3.80	"
49	"	213	Dirty brown, not very hard but saltish	7.992	67.6	6.390	6.40	"
50	"	219	Reddish brown, hard, crystalline, saltish	8.194	77.6	7.778	6.60	"
51	"	223	Reddish brown, soft and sweet	7.184	68.0	2.928	4.80	"
52	"	244	Dirty brown, soft and sweet	7.632	68.0	4.154	7.00	"
53	"	270	Reddish brown, hard, slightly saltish	7.780	72.0	6.290	7.20	"
	"	281	Reddish brown, not very hard, crystalline and saltish.					"
54	"	285	Dark brown, not so hard and saltish	7.596	74.0	4.364	8.80	"
55	"	290	" " " " soft, crystalline, sour and burnt	6.836	74.4	4.084	6.00	"
56	"	299	Light brown, hard, crystalline, sweet	6.554	77.6	3.876	7.00	"
57	"	300	Dirty brown, soft, crystalline, burnt and sour	8.378	68.0	6.310	6.00	"
58	"	301	Reddish brown, melted, sour	8.374	61.6	3.222	4.10	"
59	"	313	Brown, hard, crystalline and sweet	6.238	76.0	4.080	7.80	"
60	"	326	Reddish brown, soft crystalline, sour	8.214	65.2	7.048	9.40	"
61	"	331	Brown, soft, crystalline, saltish	8.070	73.2	7.500	7.60	"

Line test.





85	427	Brown, hard, crystalline and sweet ..	6.784	82.0	6.116	5.60	"
86	429	Light brown, hard, crystalline, sweet ..	5.646	80.8	4.366	7.80	"
87	432	Dirty dark reddish brown, soft and saltish ..	8.390	70.0	3.624	5.40	"
88	433	Dark brown, hard, crystalline, burnt ..	7.646	74.8	4.610	6.00	"
89	434	Reddish brown, hard, crystalline, sweet ..	7.936	75.2	3.986	6.00	"
90	435	Brown, hard, crystalline, slightly burnt ..	6.404	81.2	6.036	7.00	"
91	436	Dark brown, soft crystalline, saltish ..	7.736	70.0	4.708	10.60	"
92	437	soft and sour ..	8.652	71.2	7.262	5.20	"
93	438	Dark brown, hard, crystalline, saltish ..	7.208	74.8	4.626	8.60	"
94	509	Reddish dark brown, not hard, but sweet ..	7.380	70.8	6.560	6.60	"
95	511	Pale reddish brown, hard, crystalline & saltish ..	7.820	75.6	5.540	5.60	"
96	513	Slightly reddish brown, soft, saltish ..	7.170	76.8	5.736	7.80	"
97	517	Reddish brown, soft and saltish ..	7.620	69.2	5.474	8.60	"
98	518	Dark brown, hard, crystalline, saltish ..	6.552	74.4	3.420	4.80	"
99	519	soft, slightly burnt ..	7.140	69.2	2.600	5.00	"
100	H.M. 320	Brown, hard, crystalline and sweet ..	5.610	80.0	4.890	4.50	"
101	544	Reddish brown, hard crystalline, sweet ..	5.800	80.0	2.010	4.40	"
102	544 Str.	Brown, soft and sweet ..	6.450	73.6	3.646	5.40	"
103	608	Dirty brown, hard, crystalline, sweet ..	7.518	74.0	7.736	5.80	"
104	613	Light brown, hard, crystalline, sweet ..	7.050	74.0	3.450	7.00	"
105	617	Dark brown, soft and sour ..	7.134	66.0	3.934	3.80	"
106	627	Dark brown, hard and saltish ..	6.844	73.6	3.040	6.00	"
107	P.O.J. 2714	Reddish brown, hard, crystalline, sweet ..	6.600	74.8	3.516	5.00	"
108	2725	Brown, soft and saltish ..	6.080	74.0	2.302	3.30	"
109	2878	Brown, hard, crystalline, slightly burnt ..	6.284	73.2	5.220	5.60	"
110	2883	Reddish brown, hard and saltish ..	4.000	72.8	5.226	7.40	"
111	D. 109	Dark brown, hard, slightly burnt, but sweet ..	6.700	72.0	8.780	5.40	"
112	Kiji. B.	Reddish brown, hard, slightly burnt ..	6.370	78.0	4.000	5.40	"
113	E. K. 28	Reddish brown, hard, soft, slightly burnt ..	6.502	70.8	1.900	6.60	"
114	Local White Co. 243	Reddish brown, soft, crystalline, burnt ..	5.800	81.2	3.220	3.20	"
115	213-A.	" " " hard, crystalline, sweet ..	7.960	75.2	2.820	3.80	"
116	"	" " " very hard, slightly burnt & saltish ..	5.372	83.6	3.302	4.00	"
117	213-B.	Pale brown, very hard, sweet ..	6.904	76.0	2.666	4.60	"
118	213-C.	Reddish brown, hard, crystalline, sweet ..	7.274	76.4	3.210	5.00	"
119	"	Pale reddish brown, very hard, crystalline and slightly saltish ..	6.820	78.8	4.870	5.90	"
120	213-E.	Reddish brown, slightly saltish, crystalline ..	8.580	73.2	2.378	4.60	"
121	213-F.	Reddish brown, hard, crystalline slightly saltish ..	7.692	73.2	2.420	3.90	"
122	223-A.	Reddish brown, hard, crystalline and sweet ..	6.570	72.4	3.206	3.40	"
123	223-B.	" " " " ..	7.100	72.8	3.024	3.00	"
124	223-C.	Pale brown, hard and sweet ..	7.020	77.6	4.096	4.20	"
125	223-D.	Reddish brown, soft, crystalline and sweet ..	8.160	72.0	4.150	2.60	"

Antoons.

STATEMENT No. 5.—(contd.)  
 THE RESULTS OF ANALYSIS OF "GUL" SAMPLES, FROM RUDRUR, PARBHANI AND HIMAYET SAGAR  
 For the year 1945-46 F. (1936-1937).

Srl. Nos.	Sample from	Variety of cane	Description of "gul" samples	Moisture per cent.	Sucrose per cent.	Ash per cent.	Alkalinity in ash from 100 Grms. gul as normal acid	Remarks
126	Himayyet Sagar	Co. 223-E.	Pale brown, not very hard, sweet	9.040	76.8	4.130	6.20	Rafatons.
127	"	223-F.	" " " slightly saltish	7.928	72.0	2.838	3.80	"
128	"	281-A.	Reddish brown, hard and sweet	6.780	77.6	2.562	3.80	"
129	"	281-B.	Pale brown, hard and sweet	5.384	79.2	3.380	3.40	"
130	"	281-C.	Reddish brown, hard, slightly saltish	7.220	74.8	2.274	3.20	"
131	"	281-D.	Brown, hard, crystalline, sweet	7.460	78.0	2.940	4.60	"
132	"	281-E.	Pale reddish brown, hard, crystalline and sweet	6.104	62.0	2.330	3.00	"
133	"	281-F.	Reddish brown, soft, slightly saltish	8.674	63.6	2.170	2.10	"
134	"	290-A.	Pale brown, not very hard, sweet	8.544	70.0	2.788	3.80	"
135	"	290-B.	Reddish brown, not so hard, crystalline and slightly saltish.	8.390	65.4	2.750	4.80	"
136	"	290-C.	Pale brown, soft, crystalline and slightly saltish.	7.468	78.0	3.884	5.80	"
137	"	290-D.	Brown, soft and saltish	8.250	71.2	3.290	5.30	"
138	"	290-E.	Pale brown, soft, slightly saltish	7.760	74.4	2.740	5.80	"
139	"	290-F.	Dark brown, not so hard, saltish	9.024	69.6	2.752	3.40	"
140	"	300-A.	Pale brown, not so hard, slightly saltish	8.026	68.4	2.700	2.00	"
141	"	300-B.	Brown, soft and sweet	8.040	68.0	2.480	3.20	"
142	"	300-C.	Pale reddish brown, hard, sweet	7.990	75.4	4.140	4.00	"
143	"	300-D.	Pale brown, hard, crystalline, and slightly saltish	6.006	76.4	2.570	3.30	"
144	"	300-E.	Brown, hard, crystalline, and i sweet	6.080	74.4	3.010	2.80	"
145	"	300-F.	Reddish brown, hard, crystalline and sweet	5.390	64.0	3.630	1.40	"
146	"	313-A.	Pale reddish brown, hard, crystalline and i sweet	5.560	74.8	3.950	3.40	"
147	"	313-B.	Pale reddish brown, hard, crystalline and sweet	6.106	76.8	4.184	4.10	"
148	"	313-C.	Pale brown, hard, crystalline, sweet	5.824	74.8	2.686	3.40	"
149	"	313-D.	" " " and sweet	5.172	75.4	2.966	3.60	"

150	"	313-E.	" reddish brown, not so hard and sweet	7.214	69.6	3.766	4.40	"
151	"	313-F.	Brown, hard, crystalline, sweet	7.214	73.2	4.766	4.60	"
152	"	331-A.	Reddish brown, hard and slightly saltish	5.270	78.0	2.586	3.40	"
153	"	331-B.	Reddish brown, hard, crystalline, slightly saltish	4.580	75.6	2.820	4.00	"
154	"	331-C.	Reddish brown, hard, crystalline, and sweet	5.700	74.4	2.502	3.20	"
155	"	331-D.	Brown, hard, crystalline and slightly sour	7.100	78.0	2.612	2.80	"
156	"	331-E.	Brown, hard crystalline, sweet	3.260	80.0	4.080	4.80	"
157	"	331-F.	Brown, soft and sweet	7.340	72.0	3.930	2.60	"
158	"	E.K. 28-A.	Brown, hard and sweet	6.270	79.6	2.980	2.60	"
159	"	28-B.	Reddish brown, hard, crystalline slightly burnt.	6.590	78.4	1.580	2.20	"
160	"	28-C.	Brown hard, crystalline, sweet	4.960	84.8	1.504	3.40	"
161	"	28-D.	Reddish brown, hard, crystalline, slightly burnt.	5.094	80.8	1.334	2.60	"
162	"	28-E.	Reddish dark brown, hard, sweet	6.970	76.4	1.290	2.50	"
163	"	28-F.	Reddish dark brown, soft, crystalline, burnt but sweet.	9.070	70.0	1.356	2.40	"
164	"	H.M. 320-A.	Pale reddish brown, hard, crystalline and sweet	6.080	77.6	2.334	3.40	"
165	"	320-B.	Light brown, hard, crystalline, sweet	8.200	70.8	1.730	2.10	"
166	"	320-C.	Brown, soft, crystalline, sour	8.068	65.2	3.248	5.80	"
167	"	320-D.	Reddish pale brown, hard, crystalline and sweet.	7.980	78.4	2.530	2.30	"
168	"	320-E.	Light brown, soft and sour	8.940	72.0	1.700	2.30	"
169	"	320-F.	Dirty brown, soft, crystalline and slightly sour.	8.104	73.6	1.556	1.70	"
170	"	544	Pale brown, hard, crystalline and sweet	7.210	73.2	1.990	2.70	"
171	"	Striped-A.	Reddish brown, soft and burnt	8.500	66.4	1.860	1.20	"
172	"	B.	Reddish brown, hard, crystalline and sweet	7.180	66.0	1.160	1.90	"
173	"	C.	Dark brown sweet and soft	8.370	74.0	1.380	1.60	"
174	"	D.	Reddish dark brown, hard, crystalline and sweet.	7.320	69.6	0.980	1.60	"
175	"	E.	Reddish dark brown, soft, crystalline, slightly burnt.	8.464	76.0	1.264	2.40	"
176	"	P.O.J. 2714-A.	Reddish brown, soft and saltish	8.660	70.8	2.268	3.00	"
177	"	2714-B.	Dark brown, soft, crystalline, slightly sour	8.142	65.6	1.930	2.80	"
178	"	2714-C.	Pale reddish brown, soft, crystalline and sour	9.684	73.2	2.702	3.20	"
179	"	2714-D.	Reddish pale brown, soft, crystalline, saltish	7.726	71.2	5.432	3.40	"
180	"	2714-E.	Brown, hard and saltish	5.504	76.0	2.342	3.60	"
181	"	2714-F.	Slightly reddish brown, soft, crystalline and sour.	9.708	74.4	4.072	4.00	"
182	"	2778-A.	Reddish brown, soft, sweet	7.170	72.0	5.460	3.00	"
183	"	2778-B.	Reddish brown, hard, crystalline, saltish	7.512	71.2	4.812	3.20	"
184	"	2778-C.	Dirty brown, hard, crystalline, sweet	8.044	75.2	2.124	3.20	"
185	"	2778-D.	Reddish brown, hard, crystalline, slightly saltish.	8.066	76.0	2.224	3.60	"
186	"	2778-E.	Reddish pale brown, hard, crystalline and sweet.	8.340	81.6	3.312	3.20	"
187	"	2778-F.	Reddish brown, hard, crystalline and sweet	8.200	78.4	2.600	3.60	"

## PROGRAMME OF WORK.

AGRICULTURAL CHEMICAL SECTION, HIMAYATSAGAR,  
FOR THE YEAR 1346-47 *P.* (1937-38).

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1. Sugarcane juice analysis:  
    (*a*) At Himayatsagar.  
    (*b*) At Rudrur.
2. Analysis of Gul samples from various farms.
3. Analysis of castor seeds.
4. Other routine analytical work.
5. Direction of the chemical work in connection with  
    the Dry Farming Research Scheme, Raichur.

(Sd.) P. G. KRISHNA,  
AGRICULTURAL CHEMIST,  
*H.E.H. the Nizam's Government.*

*Annual Report of the Assistant Entomological Superintendent, H.E.H. the Nizam's Government, for the year 1345-46 F. (1936-37).*

*Charge:*—I held the charge of the Section throughout the year excepting between dates 6th Farwardi 1346 F. to 11th Khurdad 1346 F., when I was on privilege leave. Mr. G. Ranga Rao, B.A., B.Sc., acted for me.

2. *Staff:*—Mr. Ranga Rao, Junior Agricultural Officer, continued to work in the Section and he was in charge of the Red Hairy Caterpillar and the Castor Semi-looper Campaigns in the Mahbubnagar District. Mr. S. Ramamurthy, the Junior Kamgar of the Section, continued to look after the campaign work in the Nalgonda district. At headquarters, Mr. Dhanpath Rai, the Senior Kamgar, looked to the insect collection and rearing and attended to the office work.

3. *Tours:*—I was on tour for 104 days, chiefly attending to the demonstration of control measures of the Red Hairy Caterpillar and the Castor Semi-looper pests. In response to urgent requests I went to some of the Government Farms, and a few localities in the districts, wherefrom reports had been received from time to time of insect pests damage, for first studying the pest and then giving advice. But during the year under report the movement of the Entomological Section's staff was very much restricted. This year the demonstration of control measures for insect pests in the districts was turned over to the District Agricultural Officers as a part of their regular propaganda work.

4. *Pests and Enquiries:*—There were sixty-four enquiries both written and oral during the year under report from the various garden owners, *raiyats*, revenue officials, Government Farms and District Agricultural Officers. Mostly, these were answered through letters, or referred to the concerned District Agricultural Officers. The following are a few of the important pests of which reports have been received.

(1) *The Paddy Hispa*:—A severe attack to the paddy crop by this insect was noted chiefly in the districts of Nizamabad, Mahbubnagar, Atráf-é-Balda, and Adilabad during this year in the *abi* season only. The attack during the *tabi* season was mild.

(2) *The Paddy Stem-borer*:—A general outbreak of this insect was prevalent chiefly in the following paddy growing districts, viz., Nizamabad, Mahbubnagar, and Atráf-é-Balda during both the seasons of the year.

(3) *The Jowar Stem-borer*:—Complaints were received from the districts of Atráf-é-Balda, Nalgonda and Mahbubnagar of damage inflicted by this insect on a large scale to the young jowar crop.

(4) *The Jowar Grasshopper*:—Reports were received of damage inflicted by this pest to the jowar crop from Nalgonda and Mahbubnagar districts.

(5) *The Castor Semi-looper*:—An outbreak of this pest was noted chiefly in the districts of Nalgonda, Mahbubnagar and Atráf-é-Balda. It also occurred on all the Government Farms, wherever castor was grown.

(6) *The Sugarcane Stem-borer*:—Occurrence of the increased damage due to this insect to the sugarcane crop was noticed in the districts of Medak and Nizamabad.

(7) *The Sugarcane Leaf-hopper*:—This insect was noted in some numbers during this season also on the sugarcane crop at the Main Farm, Himayet Sagar.

(8) *The Linseed Caterpillar*:—The linseed crop at Himayet Sagar had a bad attack of this insect.

(9) *The Gram Pod-borer*:—Severe damage to the gram crop was reported due to this insect from Raichur and Atráf-é-Balda districts.

(10) *The Soya Bean Hairy Caterpillar*:—The Soya Bean crop of the Himayet Sagar Main Farm suffered from an attack of this insect.

(11) *The Tur Pod-borer*:—The appearance of this insect in a bad pest form was reported from Mahbubnagar district during this year.

(12) *The Mango-borer*:—Enquiries regarding the treatment for this insect trouble were received from a number of garden owners of Atráf-é-Balda district.

(13) *The Mango-hopper*:—The mango crop round about Vicarabad was reported to have suffered from a bad attack of this insect.

(14) *The Cycus Caterpillar*:—The Cycus plants of the city River gardens suffered from a bad attack of this insect.

(15) *The Cocoonut Beetles*:—From Atraf-e-Balda district there were a few enquiries regarding the treatment for this insect.

(16) *The Tamarind Leaf-eater*:—The tamarind trees of a few localities in district Mahbubnagar suffered badly from the ravages of this insect.

(17) *The Mites on Figs*:—The Fig plantation of the Horticultural Station, Himayet Sagar, was severely attacked by this insect.

(18) *The White Scales on Figs*:—These scale insects were observed to attack the trunk of the fig plants belonging to the Horticultural Station, causing cracking of the bark.

(19) *The Rose Chaffer Beetles*:—The help of the Section was asked for the treatment of this insect trouble by a few garden owners of Hyderabad city, having a large number of rose plants.

(20) *The Mealy Bug on Crotons*:—There were enquiries regarding the treatment for this insect attack on crotons from a number of city garden owners.

(21) *The Gall Insect on Jasmine*:—The jasmine gardens round about the city of Hyderabad suffered from an attack of this insect.

(22) *The Betel-vine Bug*:—Report of this insect trouble was heard from Nizamabad district *Pan* gardens.

(23) *The Lucerne Caterpillar*:—The lucerne crop of Rudrur Government Farm and also of the Hingoli Stud Farm suffered badly from an attack of this insect.

5. *Seasonal Conditions and Their Effects on Pests of the Year*.—The season on the whole was rather unfavourable to the Red Hairy Caterpillar demonstration work in the campaign villages, because of the early pre-monsoon showers in the middle of Tir, and the scanty



preripitation during the months of Amardad and Shehrewar 1345 Fasli. The Tir showers were somewhat helpful to digging of pupæ though they had caused an early emergence of the Red Hairy Caterpillar moths, which escaped picking by the campaign workers. On the other hand the season was favourable to the castor crop over the whole of the castor belt. Owing to the peculiar weather conditions that prevailed during this season, the incidence of the Castor Semi-looper was noted to be severe at the later stage of the crop as compared to the earlier period. The occurrence of the pest was also noticed to be of a very wide-spread nature, for, reports were being received from a large number of surrounding villages of the work circles.

Weather conditions were rather unfavourable to a general outbreak of the Paddy Hispa during the *tabi* season, although there had been noticed a bad occurrence of the insect during the *abi* season.

The Rice Stem-borer incidence was of a wide-spread nature. The absence of untimely rains and cloudy weather at the time of flowering of mango trees prevented a wide-spread damage to the mango inflorescence by the Mango Hopper.

Damage by the Swarming Caterpillar of paddy was noted to be on the increase.

There was trouble in some of the paddy growing tracts from Fresh Water Crabs.

There was no wide-spread occurrence of the Field Rat during this season.

6. *Demonstrations and Investigations*:—(a) *The Red Hairy Caterpillar*:—(*Amsacta albistriga*), The Section continued its demonstration of the control measures against the Red Hairy Caterpillar pest during this season also. The work was spread over the following group of work circles:—

No.	Mahbubnagar District	Nalgonda District
1.	Achampet to Amrabad Circle.	Nalgonda to Gurrampode Circle.
2.	Bijinapali to Achampet Circle.	Gurrampode to Mallapalli Circle.
3.	Midgel to Kalvakurthi Circle.	
4.	Kalvakurthi to Charakonda Circle.	

During the season under report work was continued on similar lines as during the last season. The demonstration of control measures for the Red Hairy Caterpillar started in all the villages from Amardad 1, 1345 F., and continued during this year for a period of ten weeks. But before starting of the actual campaign, that is, in the month of Tir 1345 F., propaganda by way of magic lantern lectures was carried on in the villages of the new circles of Kalvakurthi-Charakonda and Gurrampode-Mallapalli. In these lectures great emphasis was laid on the life-history details and control measures to be adopted by the cultivators for controlling the pest. The seasonal vicissitudes experienced during 1345 F., were on the whole unfavourable to the emergence of the Red Hairy Caterpillar moths in large numbers. The early showers of rain received in the month of Tir helped in the pupæ digging operations to some extent. In the collection of old circles there was a gradual falling off of the moths and caterpillars picked, showing the decrease of the pest. A statement giving the pupæ, moths and caterpillars collected in the various circles is given at the end of this report as Appendix I.

During this season also a detailed accounting was maintained of the expenses incurred in this work. The data gathered indicate the low expenses that are required for working out the control measures, which the cultivators in perhaps most cases could easily afford to spend. The educational effect of the campaign started in the various work circles of the districts of Mahbubnagar and Nalgonda for the past few years continued to spread itself over wider area. The *raiya*ts of the villages, where the work has been in progress for the last two seasons, are now convinced of the continuous stages of the pest, its damage and the efficiency of the control measures advocated by the Department. The cultivators of the extension villages have started showing interest in the work and are very slowly adopting the control measures, recommended by the Department. The effect is encouraging in the advisory areas also.

(b) *The Castor Semi-looper*:—(*Achæa janeta*). The spraying demonstration against this serious pest of the castor lasted roughly over a period of twenty-three weeks starting from Shehrewar 23, 1345 F., and lasting till Isfandar 15, 1346 F. It was spread over the same

group of work circles as comprised the Red Hairy Caterpillar campaign area. During this season the pest incidence was severe at the later stages of the crop as compared to the earlier. The attack of the pest was also noticed to be of a very wide-spread nature, for, reports were being received from a large number of surrounding villages of the work circles. The peculiar nature of this pest, the suddenness of its appearance, its voracious habits in devouring the plant tissues, demand employing something very effective by way of control operations. As no effective methods of control are known to the cultivators for saving their crop from the ravages of this pest, the help which they get through the Department is much appreciated by them.

The Section has been carrying on this work since 1341 F. The control measures advocated, viz., spraying with one of the arsenicals, has been effective. The cultivators of the campaign villages have to a large extent understood the method and could adopt it easily.

This year only lead arsenate obtained from Messrs. The Imperial Chemical Industries (India) Ltd., Bombay, was used. In all the work circles it has given uniformly good results. But the strength of the insecticide has had to be kept between 4 to 6 tolas per sprayer of  $2\frac{1}{2}$  gallons capacity according to the nature of the attack of the pest. The stuff is light and readily mixes in water. Trials with it will be continued during the next season also.

As regards trials with sodium buosilicate, it was experienced that first the stuff is very coarse and not readily miscible in water. So, when used as a spray liquid, the whole insecticide settles down at the bottom of the tank of the sprayer instead of coming out and spreading on the leaves. Secondly, when used as a dust, it fails to stick on to the leaves of the castor plant in quantity enough to be effective for killing the pest. The greater portion of the dust falls off on the ground. So, this insecticide, though greatly popular as a poison bait, is not useful against the Castor Semi-looper in all the stages of attack.

The distribution of cheap cans for the use of the insecticide was continued. The cans are becoming popular and are readily purchased by the cultivators. During

this season the section distributed 104 cans in various work circles. Besides these pressure sprayers are also becoming popular with the larger land-owners.

(c) *The Rice Hispa*:—(*Hispa armigera*). The rice hispa has been noted to be appearing in a pest form regularly at least for the last few seasons over most of the paddy growing areas of the State. The work of collection of some detailed information regarding the amount of damage inflicted was continued in a few villages of Mahbubnagar district. During the *abi* season there was noted a severe and general attack. The percentage of the damage worked out to 12 to 15 of the produce. Whereas during the *tabi* season the attack was of a local nature only, certain areas being attacked badly by the pest. But, wherever the damage was intense, it was seen to rise to as high as 33 per cent. of the total produce. Even these rough figures collected go to show that hispa is an important paddy pest, capable of inflicting much financial loss to the cultivator.

The section has been carrying on trials with the following control measures:—(1) Clipping of the tips; (2) Use of hand-net; (3) Rosin-bag bagging; (4) Spraying with Arsokoll and Pysect mixture, with varied amount of success. For acquainting the cultivators with the life-history details of the insect and the simple control measures to be adopted for keeping it in check, a leaflet got ready by the section was distributed to the cultivators by the District Agricultural Staff.

(d) *The Betel-vine Bug*:—(*Disphinctus politus*). After closing down of the betel-vine garden at Janakempet, the District Agricultural Staff had been entrusted with the work of demonstrating the laying out of the betel-vine gardens on the improved Janakempet method lines. The section has prepared a small leaflet on the betel-vine bug control and sent it for publication.

(e) *The Jowar Kadbi Moth* (*Simplicia robustalis*). During the year under report there was no appearance of this pest and complaints of its damage were not received from anywhere.

(f) *The Prickly-pear Cochineal Insect*:—(*Dactilopius tomentosus*).—The insects have spread so much in the State that the prickly-pear has been fast becoming a rare plant. The Section sent a consignment of these

insects to the State of Bharatpur for introducing them there at the request of their Agricultural Department.

(g) *The Field Rat*:—The use of Glass-powder baits for field-rats was advocated. The section prepared a leaflet on “Field Rats and Their Control” and forwarded it for publication.

(h) *The Paddy Stem-borer*:—(*Schoenobius incertellus*).—The damage done by this pest to the paddy crop of the State is also on the increase. Reports of its occurrence were heard from almost all the paddy growing districts. On the Himayet Sagar Main Farm, the section carried on trials both in the *abi* and in the *tabi* seasons for recording the incidence of this insect. The light-trap was set up over 193 nights. The total collection of moths amounted to 21,748. Of these 11,107 were females and 10,641 males. The highest catch was recorded during the month of Azoor and the lowest in the month of Bahman. During the *abi* season the collection of moths attracted to the light-trap started rising slowly from Aban and came down in Bahman. Again in the *tabi* season it was noticed that the collection was highest in the month of Farwardi and then it started to go down slowly, almost coming to a minimum in the month of Tir. The setting of light traps would be continued regularly to collect more information about this pest. Even the past few seasons’ record is sufficient to show that the setting up of light-traps helps to a great extent in checking the pest. As for other control measures for this pest, immediate ploughing of the field after harvest of the paddy crop and burning of the stubbles, are being recommended.

(i) *The Swarming Caterpillar of Paddy*:—(*Spodoptera mauritia*):—In Warangal district this pest has been noted of late to be on the increase year by year. The paddy crop in the nursery stage itself is badly attacked. Detailed observations regarding this pest could not be undertaken. So as a first aid the cultivators are only advised to run a rope over the attacked plans and dislodge the caterpillars after slightly-kerosening the irrigation water.

(j) *The Sugarcane Borer*:—Although this insect has been noted to be on the increase in the sugarcane area of the State, yet no detailed observations for knowing the exact species concerned have been undertaken.

In the material examined at the Himayet Sagar Main Farm, (*Argyria sticticrasis*) was seen in large numbers.

(k) *Epilachana* Beetles on the Brinjal:—This pest predominates on the brinjal crop grown especially in the summer months and under well-irrigation. In the initial stage of the attack only, the garden owners were advised to spray the plants with lead arsenate for keeping down the pest.

(l) *The Mango Hopper*:—(*Idiocerus* sp.)—The occurrence of this pest during the season was rather of a sporadic nature only. But wherever it occurred, the mango inflorescences were badly damaged, thus causing a set-back in the normal fruiting of the trees. Advice was given for spraying the plants with Potash Fish Oil Rosin Soap and dusting with sulphur.

(m) *The Mango Borer*:—(*Bactocera rubus*).—This is a common pest occurring in almost every mango garden. The insect tunnels itself into the branches of the mango tree and in bad cases of attack the branches dry off. The Section advised the garden owners for treating the tunnels containing the grubs with crude creosote and chloroform mixture.

7. *General Collection and Identification of Insects*:—The following insects were reared mainly for being incorporated into the Section's collection:—

- (1) The Sugarcane Leaf Hopper (*Pyrilla* sp.).
- (2) The Gram Pod Borer (*Chloridea obsoleta*).
- (3) The Linseed Caterpillar (*Grammodes stolidus*).
- (4) The Cotton Dusky Bug (*Dysdercus cingulatus*).
- (5) The Paddy Hispa (*Hispa armigera*).
- (6) The Plantain Hairy Caterpillar (*Pericallia ricini*).
- (7) The Tur Bug (*Clavigralla gibbosa*).
- (8) The sunhemp Moth (*Utetheisa pulchella*).
- (9) The Costor Hairy Caterpillar (*Eupbroctis scintillans*).
- (10) The Red Pumpkin Beetle (*Aulacophora abdominalis*).
- (11) The Lemon Butterfly (*Papilio demoleus*).
- (12) The Paddy Grasshopper (*Hieroglyphus banian*).

8. *Trials with different Insecticides*:—The following insecticides were received for trial during the

year:—(1) Sodium fluosilicate; (2) Whizz; (3) *Balanites roxburghii*; (4) *Mundulea suberosa*; (5) *Randia dumetorum*; (6) *Pongamia glabra*; (7) Dry Pyroside and (8) A-23, substitute for Sodium arsenite. As regards the trials with Sodium fluosilicate it was seen, that, as it is not miscible in water, it could not be used as a spray liquid, and, on account of its coarse nature it could not be used as a dust, since it fails to stick on to the leaves. Regarding Whizz, which is an oil spray, it was tried out chiefly on the scale insects. The percentage of kill was noticed to be fairly good. No conclusive results could be obtained about other insecticides, further trials of which would be continued as opportunities permit during the coming season.

9. *Publications*:—The Section got ready the following leaflets:—(1) “The Field Rats and Their Control”; (2) A Short note on the “Fresh Water Crabs”; and (3) “The Betel-vine Bug Control” and forwarded them to the Director of Agriculture, for publication.

10. *Extension Work*:—The staff of the Entomological Section visited a number of villages of Mahbubnagar and Nalgonda districts and delivered magic lantern lectures, chiefly on the Red Hairy Caterpillar and the Castor Semi-looper Pests. The Section also put up small shows of different insect pests; insecticides and appliances at the various Annual Agricultural Demonstrations held during the last year on Government Farms. It also conducted Refresher Courses in Entomology for the benefit of the District Agricultural Officers in the four Deputy-Directors’ Divisions.

11. *Sale of Insecticides and Appliances*:—The use of different insecticides and appliances advocated by the section is slowly becoming popular. The section distributed insecticides and appliances worth O.S. Rs. 147-8-4 during the year.

12. *Conclusion*:—I acknowledge with thanks the co-operation of the different members of the section both temporary and permanent and also the other officers of the Department who helped me in carrying on the work during the year.

(Sd.) T. K. VENKATKRISHNAN,  
Assistant Entomological Superintendent.





## APPEN

*Statement showing the Collection of the Red Hairy Caterpillar, Pupae, Moths and the Season*

Se- rial No.	Name of Work Circles	AMERDAD 1845 F.		
		Pupae	Moths	Cater- pillars
1	2	3	4	5
	<i>District Nalgonda.</i>			
1	Nalgonda—Gurrampode Circle .. ..	4,197	..	..
2	Gurrampode—Mallapalli Circle .. ..	1,078	45	..
	Total ..	5,270	45	..
	<i>District Mahbubnagar.</i>			
1	Midgel—Kalvakurthi—Circle .. ..	8,145	415	..
2	Kalvakurthi—Charakonda Circle .. ..	6,999	1,166	55,388
3	Achampet—Amarabad Circle .. ..	629	335	..
	Total ..	15,773	1,916	55,388
	Grand Total of the two districts ..	21,043	1,961	55,388

## DIX I.

*Caterpillars in different Work Circles of Nalgonda and Mahbubnagar Districts in 1345 Fashi.*

SHAHREWAR 1345 F.			MEHIR 1345 F			GRAND TOTAL		
Pupae	Moths	Caterpillars	Pupae	Moths	Caterpillars	Pupae	Moths	Caterpillars
6	7	8	9	10	11	12	13	14
357	2,096	8,18,244	..	..	20,510	4,554	2,096	8,38,754
71	4,268	3,30,800	..	..	11,960	1,144	4,313	3,42,760
428	6,364	11,49,044	..	..	32,470	5,698	6,409	11,81,514
40	2,821	3,05,297	..	..	56,000	8,185	3,286	3,61,297
..	3,373	10,80,780	..	..	93,260	6,999	4,539	12,29,428
..	1,232	1,18,973	..	..	..	629	1,567	1,18,973
40	7,426	15,05,050	..	..	1,49,260	15,813	9,342	17,09,698
468	13,790	26,54,094	..	..	1,81,730	21,511	15,751	28,91,212

## APPENDIX II.

*Statement showing the Acreage Sprayed against the Castor Semi-looper in Mahbubnagar and Nalgonda Districts on the Season 1345-1346 Fasli. (1936-37)*

Serial No.	Name of different Work Circles	Acreage sprayed from 15th Mehir 1345 to 15th Isfandar 1346 F.	
		Acres	Guntas
1	2	3	4
<i>District Mahbubnagar.</i>			
1	Achampet—Amarabad Circle .. ..	206	28
2	Bijinapalli—Achampet Circle .. ..	122	..
3	Midgel—Kalvakurthi Circle .. ..	77	..
4	Kalvakurthi—Charakonda Circle .. ..	225	5
	Total .. ..	660	33
<i>District Nalgonda.</i>			
1	Nalgonda—Gurrapode Circle .. ..	483	1
2	Gurrapode—Mallapalli Circle .. ..	391	1
	Total .. ..	874	2
	Grand total .. ..	1,534	35

*Programme of Work of the Entomological Section for the  
year 1346-47 Fasli.*

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1. The Red Hairy Caterpillar campaign will be continued.
  2. The Castor Semi-looper campaign will be continued.
  3. The study of the life-history of some of the more important insect pests will be continued.
  4. Trials will be carried out with different insecticides.
  5. Advice and demonstration regarding control of insect pests will be given, as far as possible.
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*Annual Report on the working of the Cattle Breeding  
Farm and Dairy Himayatsagar, Hyderabad-Deccan,  
for the year ending 1345-46 F.*  
1936-37

1. *Introduction.*—This Farm was opened by His Exalted Highness the Nizam's Government under the control of the Agricultural Department in Thir 1339 F. It is situated near Budvel village, Atrai-i-Balda on the Hyderabad-Himayatsagar road five miles from Charminar.

2. The estate is nearly 464 acres in extent and is about 1700 feet above the sea-level. The lie of the land is from north-east to south-west with slopes giving the appearance of fine terraces.

3. The soil in higher levels is well drained sandy gravel and black clay loam in lower levels.

4. The Farm has an average rainfall of about 24 inches. A canal by name Hydari canal runs through the estate which provides irrigation for the west area of about 62 acres. On this canal bank is installed a pumping set for pumping filtered and sterilized water for the use of cattle yard, dairy and staff.

5. The Farm is well fenced with barbed wire. The public road joining Hyderabad with Himayatsagar divides the grazing area from the cultivable area. All the buildings on the Farm are in the cultivable block and are in a line with the P.W.D. road. The estate as a whole is well laid out with a network of roads, covered with valuable avenue trees.

6. *Object.*—The principle breeding policy has for its objective the production of improved breed of cattle, a type principally for plough work for the Telingana tract. This objective is being sought by the establishment of pedigree herds by selection and grading. For the inclusion of animals into the pedigree herds selection although is made from the point of view of plough work, consideration is also given to the milking capacity so that the latter quality may not unnecessarily be sacrificed for the former.

7. *Charge and Establishment.*—The executive staff consists of the Superintendent, Assistant Superintendent, Fieldman and a Mechanic.

8. The undersigned held charge of the Farm throughout the year. He was on tour for 21 days and attended the second Animal Husbandry wing meeting at Madras and visited The Imperial Institute of Animal Husbandry and Dairying, Bangalore, Veterinary Vaccine Institute, Tata Institute, Hebbal, Hosur Cattle Breeding Farm, Coimbatore Agricultural College and Dairy, and the Kaugayam herd bred by the Pattegar of Palayakottai. He also visited the Lucknow exhibition during the year.

9. During the year under report the undersigned spoke on "Cattle Breeding in Hyderabad Dominions" in the local Broadcasting station.

10. Mr. Mujahad Ali Akhil continued to work as Assistant Superintendent, during the year.

#### CATTLE SECTION.

11. The breeds of cattle bred on the Farm are (a) Krishna Valley (b) Malvi (c) Murrah Buffaloes. During the year under report two Krishna Valley and six Malvi Heifers were transferred to the breeding herd. The heifers were put to the bull at 3 to 4 years and calved in their 4th and 5th year. The stock at the end of the year stood as follows:—49 Krishna Valley cows, 33 Malvi cows, 8 she-buffaloes and 223 young stock. Two Krishna Valley bulls, two Malvi bulls and one bull-buffalo were used for stud work during the year.

12. *Krishna Valley.*—Towards the close of the year 1340 F., a foundation stock of 40 cows and 2 bulls were purchased from Kudchi near Miraj, Bombay Presidency, through the Imperial Dairy Expert. Many of the cows of the foundation stock have a mixture of either Amrath-mahal or Kilhari. This is mainly due to the foundation stock having been purchased in the open market from different owners. Drastic culling out is being resorted to for fixing the proper type. The cattle are white in colour. Light greys are also permissible. This is a good draught breed being quick and powerful. Due to careful recording, selective breeding and systematic feeding and management, appreciable improvement in the

milk yield among the home bred cows is noticed without detriment to draught qualities. Krishna Valley cow No. 5 has given the highest record of 3,382 pounds in 443 days with the daily average of 7.6 pounds.

13. *Malvi Breed*.—This well-known breed of cattle comes from Malva Ujjin, Central India. This is found to do well under all conditions of climate. It is a very good draught breed. Large number of bullocks are being engaged in the carting traffic in Hyderabad city and in the north eastern districts. The characteristic colour of the breed is pure white. The bulls are darker than the cows. A foundation stock of 40 cows and two bulls were got from Mhow through the Imperial Dairy Expert.

14. Malvi cow No. 110 has given the highest record of 3,276 pounds in 424 days with a daily average of 7.5 lbs. in her first lactation.

15. *Murrah Buffaloes Breed*.—A small herd of Murrah buffaloes is being maintained on the Farm. The year opened with 9 she-buffaloes, one bull-buffalo and nine young stock.

16. *Contagious Diseases*.—The Farm was practically free from contagious diseases excepting for an outbreak of Black Quarter which claimed four deaths.

17. With the kind co-operation of the Veterinary Department the stock is practically protected against Black Quarter and Rinderpest by preventive inoculation.

18. *Births*.—Table No. 4-B gives data of births and deaths.

(a) Krishna Valley	Births	36	Deaths	6
(b) Malvi	„	26	„	2
(c) Murrah Buffaloes	„	6	„	1

The sex ratio of male to female is as follows:—

(a) Krishna Valley	1 : .89
(b) Malvi	1 : 1.6
(c) Murrah Buffaloes	1 : 2

Table No. 2 shows details of sex ratio.

19. *Weight of Calves*.—Table No. 3 gives data on the weight of calves at different ages.

The average weight of calves 3 years and over is:—

	<i>Krishna valley</i>	<i>Malvi</i>
Bull-calves	615 pounds	739 pounds
Heifers	505 „	518 „

20. The increase in weight of home bred stock is found satisfactory in so far as the heifers come up to the dam's weight and in few instances are a little larger in size than the foundation stock.

21. *Deaths*.—Table No. 4-A gives details of mortality and their causes. In all 18 deaths occurred during the year under report; of these three were amongst the adult stock and 15 amongst the young stock. Of the 15 deaths four were from Black Quarter, 4 from wild animals, 1 from snake bite, 2 premature births, 2 from Pneumonia, 1 from intestinal trouble and 1 from internal Hæmorrhage.

22. *Percentage of Deaths to Calvings*.—Percentage of deaths to calvings for the year under report works out as follows:—

(a) Krishna Valley	..	16.66
(b) Malvi	..	7.66
(c) Murrah Buffaloes	..	16.66

Statement No. 4-B gives details of the above.

23. *Coverings*.—Table No. 5 gives details of monthly coverings by different bulls during the year. 54 Krishna Valley cows, 41 Malvi cows and one Murrah Buffalo's coverings were recorded during the year. The bulls were active and behaved satisfactorily in their coverings.

24. *Regulating Calvings*.—Table No. 6 gives details of animals in milk month by month during the year under report. From this it will be observed that the total number of animals in milk have been fairly uniform throughout the year. The average number of animals in milk in Krishna Valley is 23 with a percentage deviation of  $\pm 3.9$  and in Malvi 20.1 with a percentage deviation of  $\pm 8.9$  and in Murrah buffaloes 4.8 with a percentage deviation of  $\pm 18.7$ . It may be noted that the percentage deviation decreases as the number of animals in milk decrease.



25. *Feeding*.—The cattle are fed from December to April on Berseem, Oats and Peas. From May to September they are fed on Imphi (Sweet Sorgham) and other kinds of jowars and Maize. These are supplemented by Guinea grass, Lucerne, Rhodes grass and Kudzu Vine with an allowance of hay. In addition to these bulky fodders, the bulls get seven pounds, the young stock from two to three pounds and cows in calf five pounds of concentrates daily. Cows in milk are given one pound of grain mixture for each three pounds of milk yield in addition to three pounds for maintenance. The concentrate mixture includes Oats, Gram, Bran, Oil cake, Cotton seed, Salt, To balance the deficiency of minerals in roughage, mineral flour meal to adult and brick licks to young stock are supplied.

Table No. 7 gives details of cost of feed.

#### DAIRY SECTION.

The main object of this section is to demonstrate to the public clean milk production and handling of milk and milk products with up-to-date modern dairy machinery. Dairy premises are small but quite modern and up-to-date. The main dairy building is located on high elevated site commanding a good view of the whole estate. The Dairy room is made completely fly-proof. In it are installed the Pasteurizer, Cooler, Separator and Butter Churn, etc.

27. The Pasteurizer is of coil type and is of 800 pounds capacity. Milk is pasteurized both morning and evening. All bottling and capping are done with hand operated machinery.

28. Milk and other Dairy produce are stored in cold store till sent out for delivery. The cold store temperature is regulated by Ammonia Compressor with brine as the cooling medium. A temperature of 45 to 50 degrees is maintained in the cold store.

29. The Boiler, Wash-up room and the Electric Dynamo are located in an independent block situated to the north of Dairy building. The power unit for the working of all the Machines and for the supply of steam and hot water is a 10 H.P. vertical cross tube boiler.

30. *Milking Sheds*.—There are two up-to-date sanitary milking sheds with cement flooring, drains and feeding passage, designed to stanchion 80 cows with a cement concrete water trough in between.

31. Two roomy well ventilated calf pens with large paddocks are attached to each shed. All suckling calves are stationed in these pens to which large paddocks are attached where the calves get enough exercise. Milking is done twice daily at 10 a.m. and 10 p.m.

32. *Milk Recording*.—Since it was observed that the young stock did not thrive well by pail feeding, weaning at birth was discontinued.

The milking animals are milked completely once a week for record purposes and during the rest of the week only two teats are milked and other two allowed to the calf to suckle. This system is found to work satisfactorily in gaining the main object of the Farm of raising healthy well-developed bull calves and heifers for distribution for stud work in the districts and to build up the herd by replacements respectively.

33. One Farm bred bull for stud work has been posted at the Rural Development Centre, Patancheru. Seven bulls of three to four years have been selected and are ready to be sent out in districts.

Table No. 8-A, B and C give details of milk yield, etc. The following items of interest will be observed from the statement.

			Krishna Valley	Malvi	Murrah Buffaloes
			lbs.	lbs.	lbs.
Average milk yield	..	..	1927.4	1788.1	3711.5
Average daily yield	..	..	7 days	6.7 days	11.2 days
Average lactation period	..	..	291.5	265.3	330.8
Average service period	..	..	163.7	140.1	170
Average gestation period	..	..	106.8	117.6	156.3

Table No. 9 shows details of monthly maximum and minimum yield which was as follows:—

Breed	Maximum	Minimum	Monthly average
Krishna valley .. ..	Month Bahman 5226.5 lbs.	Month Shehrewar 4155 lbs.	lbs. 4791.5
Malvi .. ..	Bahman 4826 lbs.	Farwardi 2332 lbs.	3980.3
Murrah Buffaloes ..	Ardibehisht 2005 lbs.	Azur 1056.5 lbs.	1529

34. Table No. 10 shows details of milk yield of Dams as compared with their daughters. It will be observed that appreciable improvement in the milk yield among the Farm bred animals is noticeable in both the breeds. In Krishna Valley the purchased foundation stock have averaged 1436.1 pounds per lactation with a daily average of 5.3 pounds. The Farm bred cows averaged 1493 pounds with a daily average of 6.6 pounds. In the Malvi herd the purchased foundation stock have averaged 2,039.4 pounds per lactation with a daily average of 7.3 pounds. The Farm bred cows averaged 2,423.3 pounds with a daily average of 7.7 pounds.

35. Table No. 11 shows details of milk production and its disposal. 1,07,257½ pounds of cow's and 18,426½ lbs. of buffalo's milk were produced on the Farm during the year under review as against 1,01,696½ pounds of cow's and 36,860 pounds of Buffalo's milk during the year 1343-44 F. The decrease in the yield of buffalo's milk is due to the decrease in the number of buffaloes from 14 to 9.

36. The average daily production and sales, etc., of daily milk and other dairy produce is as follows:— 99 pounds of cow's and 29½ pounds of buffalo's milk respectively were sold to the public. 146½ pounds were fed to calves. 60½ pounds were separated. 3 pounds 9 ozs. of cream were churned. 2 pounds and 1½ ozs. of butter were sold and 2 ozs. of butter were melted into Ghee.

37. All the milk produced on the Farm is from Tubercular free herd, under clean methods in clean barns by clean labour.

#### AGRICULTURAL SECTION.

38. The total area of the Farm is 464 acres. This is divided into:—

1. Grazing area	..	300 Acres.
2. Cultivable dry area	..	60 „
3. Cultivable wet area	..	62 „

The remaining 42 acres are occupied by buildings, Paddocks, roads, drains, and toddy groves.

39. Dry area consists of poor sandy chalka. The wet area consists of medium black soil and this area with the exception of 5 acres which is higher in level than the canal is controlled by flow irrigation.

40. *Crops*.—Only rain-fed crops were raised in dry area. To effect improvement of this area systematic green manuring is being done by rotation.

41. Sunhemp was grown for this purpose, the tops cut and fed to the stock and the rest ploughed in.

42. In wet area 2 crops in majority of the plots and three in a few were raised. The chief fodder crops raised during the year were different kinds of jowars such as Nilwa, Sundhia, Imphi and local yellow. Cow pea, Ballar, Swank, Gawar, Maize, Sunflower, Oats and Berseem were raised as rotation to maintain the fertility of the soil. The chief perennials grown are Guinea grass, Lucerne and Rhodes grass.

43. Table No. 12 gives details of acreages of crops raised and the outturn and the approximate cost per 100 pounds of different crops. The total quantity of green fodder produced fed and silaged during the year was 980,600 pounds. The programme of growing Berseem for three years in succession in the same plots for improving the texture and reducing the alkalinity had to be abandoned during the year, as seeds were not available although ordered in time. Kudzu Vine made good growth and its cultivation was further extended. Details

of the acreages, etc., of different crops are given in table No. 12. The area under Lucerne was extended from  $5\frac{1}{2}$  acres to 7 acres and 30 guntas.

44. *Seeds*.—Almost all the seeds were raised on the Farm. Table No. 13 gives details of the outturn of seeds, Straw and *kadbi*.

45. *Seed Distribution*.—During the year there was good demand for seeds and settings both from the public and different Agricultural Farms. My thanks are due to the Deputy-Directors of Agriculture, for taking keen interest in popularising the growing of Imphi as fodder crops. Imphi seeds were also supplied outside the Dominions, to the Deputy-Director of Agriculture, Shimoga, Mysore State. 630 pounds of Imphi seeds, 3,000 pounds of Rhodes grass sets and  $1,135\frac{1}{2}$  pounds of Ballar seeds were sold during the year.

Table No. 14 gives details of the above.

46. *Grazing Area*.—The soil in this area is very poor and rocky and is full of foot hills. The area is divided into eight paddocks and rotational grazing was done. The bulk of the pasture is covered with Spear grass (*Andropogon Controtus*); there is also Rhosa grass to a small extent. Spear grass seems to suit the tract best but has the disadvantage of developing spears (Awns) which injure the mouths of the cattle. Rhodes grass is being introduced in this area and it is too early to say how this will compete with the local grass in the long run. Owing to the failure of monsoon no hay was harvested during the year but was grazed.

47. To supplement the supply of hay a *kancha* in Kathedan village was taken on lease from which 690,607 lbs. of hay was harvested.

48. *Silage*.—Two pits were filled during the year with 159,846 pounds of green fodder consisting of jowars, Maize, Cow pea, etc., as against 138,990 pounds in 1343-1344 F. These were opened after seven months and fed to the stock. The silage was fresh and sweet and relished by the stock. The loss on account of shrinkage and mouldiness was 33,078 pounds giving a loss of 20.7 per cent.

49. *Compost Factory*.—Manufacturing compost of Indore method was continued during the year. 60 pits of compost were manufactured and the fields manured. All the liquid manure and washing from the Dairy and Cattle yard were as usual utilized for irrigating a plot under Guinea grass in the dry area.

50. *Gardens*.—The garden on either side of the main road and in front of the officers' quarters were maintained in good condition. In addition to the 4 existing avenues one more consisting of Cassias was added during the year. With the exception of few trees which died after planting the trees in this avenue are making good growth.

51. *Agricultural Machinery*.—No new implement was bought during the year. The old ones were kept in order by timely repairs and replacements.

52. *Permanent improvements*.—Roads and drains were maintained in sound condition during the year. Roads in the wet area were improved by spreading morram and made motorable. Sanction was accorded by the Director, for building three bridges for linking the dry area with the wet, and the Dairy and Cattle yard with the calving shed and bull paddocks. The construction work is being carried out by the Public Works Department.

53. The Electric installation comprising of Deutz crude oil engine with generator for generating 5 Kilowatts worked satisfactorily throughout the year. The plant is used only for lighting purposes. All the Dairy machinery were kept in good running order throughout the year.

54. *Demonstration*.—Two demonstrations were held during the year, the first on 11-1-1346 F. and the second on 11-5-1346 F. Arrangements were made to take round the visitors. These served as promoting media to arouse interest amongst the public at large in quality milk and milk products. Visitors were impressed with the mode of handling of milk and in the manufacture of butter and with the modern machinery installed to safeguard their health.

55. *Income*.—Table No. 17 gives details of income during the year. The total receipts were Rs. 7,096-12-5 as against Rs. 10,803-10-8. The decrease is due to the

(a) decrease in the number of animals in the buffalo herd (b) decrease in the milk yield in the foundation stock of cows due to their advanced lactations. Most of them are in their 9th and 10th lactations and consequently have decreased in their milk yield.

56. *Visitors*.—767 visitors visited the Farm during the year. Few of the distinguished visitors were:—

1. Dr. and Mrs. Wright.
2. Sir Amin Jung Bahadur.
3. Col. Oliver.
4. Statistical Expert, Simla.
5. Rao Bahadur Venkat Raman (Sugarcane Expert).
6. Lieutenant Col. and Mrs. Subbiah.
7. Mr. Javariah, Marketing Officer, Simla.
8. Mr. J. J. Devalois (Missionary).
9. Delegates of the Science Congress.
10. Captain Agrawala, Secretary Adviser to Dr. Wright.

57. *Farm Bullocks*.—The year opened with 23 bullocks. One bull calf which was castrated for experimental purposes to observe the results of early and late castration was transferred to the working animals. One pair which was aged and unfit for work was sold leaving 11 pairs at the end of the year.

58. *Silver Jubilee*.—The undersigned cannot conclude the report without making a reference to the Silver Jubilee celebrations of H.E.H. the Nizam of Hyderabad and Berars. The Jubilee celebration took place from 12-5-1346 F. to 25-5-1346 F. A 25 year progress exhibition of all the departments was organised. The Cattle Breeding Farm Exhibited Models of Sanitary Milking shed, Milking pails, Pasteurizer, Cooler, etc.

59. *Conclusion*.—The undersigned is grateful to the Director, Mr. Nizamuddin Hyder, for the timely guidance, help, and whole-hearted support extended to him at all times during the year under report.

60. The undersigned records his appreciation of work of the staff.

V. S. RAMA ROW,  
*Superintendent.*

TABLE No. I.

*Statement showing the addition and decrease of Live-stock in the herd  
for the year 1-9-45 F. to 31-8-46 F.*

Serial No.	Breed & class of animals	RECEIPTS						OUTGOING BY				
		Opening balance	Purchased	Births	Transferred	Total of columns 3, 4 & 5	Total of columns 2 & 6	Deaths	Sales	Transferred	Total of columns 8, 9 & 10	Closing balance
1	2	3	4	5	6	7	8	9	10	11	12	13
1	<i>Krishna Valley.</i>											
	(a) Stud bulls ..	3	..	..	..	..	3	..	..	..	..	3
	(b) Stud cows ..	48	..	..	*2	2	50	1	..	..	1	49
	(c) Bull calves ..	48	..	19	..	19	67	5	..	† 1	6	61
	(d) Heifer calves ..	45	..	17	..	17	62	3	..	*2	3	57
2	<i>Malvi.</i>											
	(a) Stud bulls ..	2	..	..	..	..	2	..	..	..	..	2
	(b) Stud cows ..	28	..	..	*6	6	34	1	..	..	1	33
	(c) Bull calves ..	32	..	12	..	12	44	4	..	§1	5	39
	(d) Heifer calves ..	46	..	14	..	14	60	2	..	*6	8	52
3	<i>Murrah Buffaloes.</i>											
	(a) Stud bulls ..	1	..	..	..	..	1	..	..	..	..	1
	(b) Stud buffaloes ..	9	..	..	..	..	9	1	..	..	1	8
	(c) Bull calves ..	3	..	2	..	2	5	1	..	..	1	4
	(d) Heifer calves ..	6	..	4	..	4	10	..	..	..	..	10
4	<i>Bullocks</i>	27	..	..	† 1	1	28	..	6	..	6	22
	Total ..	298	..	68	9	77	375	18	6	10	34	341

\* Heifers after 1st calving transferred into adult stock.

† Castrated and transferred into bullock stock.

§ Sent to Rural development centre, Patancheru.



TABLE No. 2.

*Sex ratio of calving.*

			KRISHNA- VALLEY		MALVI		MURRAH BUFFALOES	
Se- rial No.	Months		Male	Female	Male	Female	Male	Female
1	Amardad	1345 F. ..	2	3	3	2	..	..
2	Sherewar	1345 F. ..	..	..	1	2	..	1
3	Mehir	1345 F. ..	..	2	2	1	1	..
4	Aban	1345 F. ..	3	..	..	1	..	..
5	Azur	1346 F. ..	2	3	1	1	..	1
6	Dai	1346 F. ..	3	1	..	2	..	1
7	Bahman	1346 F. ..	2	1	1	1	..	..
8	Isfandar	1346 F. ..	..	3	1	..	1	..
9	Farwardi	1346 F. ..	..	3	1	..	..	1
10	Ardibehisht	1346 F. ..	2	..	1	2	..	..
11	Khurdad	1346 F. ..	3	1	..	1	..	..
12	Thir	1346 F. ..	2	..	1	1	..	..
	Total	..	19	17	12	14	2	4
	Percentage in Sex	..	52.77	47.23	46.15	53.85	33.3	66.4
	Sex ratio							
	Male : Female	..	1 : .89		1 : 1.6		1 : 2	

TABLE No. 3.

*Periodical weight of calves.*

Breed	Age	MALE CALVES				FEMALE CALVES			
		Number of calves	Total weight of calves in pounds	Average weight of calves in pounds	Percentage increase	Number of calves	Total weight of calves in pounds	Average weight of calves in pounds	Percentage increase
Krishna valley.	Birth to 6 months.	6	724	121	Per cent. 90	2	205	102	Per cent. 154
Do ..	6 months to 1 year	5	1,155	231	54	5	1,298	259	27
Do ..	1 year to 2 years ..	11	3,902	355	53	14	4,649	332	22
Do ..	2 years to 3 years	11	5,814	482	57	12	4,869	405	24
Do ..	3 years and over ..	17	10,459	615	..	14	7,066	505	..
Malvi	Birth to 6 months.	3	572	191	60	3	390	130	97
Do ..	6 months to 1 year	5	1,578	316	11	9	2,300	256	34
Do ..	1 year to 2 years ..	7	2,453	350	6	7	2,399	343	21
Do ..	2 years to 3 years	6	3,429	572	28	11	4,701	427	21
Do ..	3 years and over ..	8	5,915	739	..	13	6,732	518	..

TABLE No. 4 "A"  
*Statement of Mortality, Causes and Percentage of Mortality for the year 1345 Fasil to 1346 Fasil.*

Serial No.	Disease	KRISHNA VALLEY						MALVI						MURRAH BUFFALOES						Total
		YOUNG STOCK						YOUNG STOCK						YOUNG STOCK						
		Adult		Male		Female		Adult		Male		Female		Adult		Male		Female		
		No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	No.	Per- cent- age	
1	Impaction of the stomach	1	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
2	Black Quarter	..	..	1	20	..	..	..	..	3	75	..	..	..	..	..	..	..	..	4
3	Distokiya	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..	1
4	Pneumonia	..	..	..	..	1	33.33	..	..	..	..	1	50	..	..	..	..	..	..	2
5	Diarrhoea	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	100	..	..	1
6	Killed by wild animals	..	..	..	..	2	66.66	..	..	1	25	1	50	..	..	..	..	..	..	4
7	Internal Hæmorrhage	..	..	1	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
8	Undeveloped (or) Weak at birth	..	..	2	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
9	Snake bite	..	..	1	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
10	Cancer of the horn	..	..	..	..	..	..	1	100	..	..	..	..	..	..	..	..	..	..	1
	Total	1	100	5	100	3	100	1	100	4	100	2	100	1	100	1	100	1	100	18

TABLE No. 4 " B. "

*Annual statement of Births and Deaths of Calves under one year and the percentage of Mortality for the year 1-9-1345 F. to 31-8-1346 F.*

Serial No.	Breed	Birth during the year	Death during the year aged under one year	Percentage of mortality	Remarks
1	Krishna Valley ..	36	6	16.66	
2	Malvi .. ..	26	2	7.66	
3	Murrah Buffaloes ..	6	1	16.66	
	Total ..	68	9	13.23	

TABLE No. 5.

ANNUAL STATEMENT OF COVERING OF COWS AND BUFFALOES,

From 1-9-1345 F.—31-8-1346 F.

Serial No.	Month			KRISHNA VALLEY		MALVI	MURRAH BUFFALOES	Remarks
				Sarang	Krishna	Chengez		
1	Amardad	1345 F.	..	1	2	2	..	
2	Sherewar	1345 F.	.	8	5	5	..	
3	Mehir	1345 F.	..	1	1	..	..	
4	Aban	1345 F.	..	1	1	2	..	
5	Azur	1346 F.	..	..	1	..	.	
6	Dai	1346 F.	..	1	5	5	1	
7	Bahman	1346 F.	..	4	3	2	..	
8	Isfandar	1346 F.	..	3	..	3	..	
9	Farwaidi	1346 F.	.	2	1	3	..	
10	Ardubehisht	1346 F.	..	6	4	10	..	
11	Khurdad	1346 F.	..	4	4	6	.	
12	Thir	1346 F.	.	1	.	3		
	Total			27	27	41	1	
	Percentage of covering in the breed during the year			50%	50%	100%	100%	

TABLE No. 6.

*Annual statement showing the number of animals in milk in each breed in the year  
1-9-45 F. to 31-8-46 F.*

Serial No.	Month	KRISHNA VALLEY		MALVI		MURRAH BUFFALOES		Remarks
		Number in milk	Devia- tion from the average	Num- ber in milk	Devia- tion from the average	Num- ber in milk	Devia- tion from the average	
1	Amardad 45 F.	23.1	+ 0.1	17.0	— 3.1	4.2	— 0.6	
2	Sherewar 45 F.	22.8	— 0.4	16.5	— 3.6	3.0	— 1.8	
3	Mehir 45 F.	21.0	— 2.0	17.3	— 2.8	3.8	— 1.0	
4	Aban 45 F.	22.6	— 0.4	22.9	+ 2.8	4.6	— 0.4	
5	Azur 46 F.	23.5	+ 0.5	20.9	+ 0.8	4.2	— 0.8	
6	Dai 46 F.	21.3	— 1.7	20.5	+ 0.4	4.0	— 0.2	
7	Bahman 46 F.	23.9	+ 0.9	22.2	+ 2.1	5.0	+ 0.2	
8	Isfandar 46 F.	24.3	+ 1.3	21.7	+ 1.6	5.2	+ 0.4	
9	Farwardi 46 F.	22.8	— 0.4	22.0	+ 1.9	5.6	+ 0.8	
10	Ardibehst 46 F.	23.0	..	21.3	+ 1.2	6.0	+ 1.2	
11	Khurdad 46 F.	25.3	+ 2.3	20.1	..	6.0	+ 1.2	
12	Tir 46 F.	22.0	— 1.0	18.9	— 1.2	6.0	+ 1.2	
	Total ..	275.6	+11.0 —	241.3	+ 21.5 —	57.6	+ 9.8 —	
	Monthly average	23.0	+ 0.9 —	20.1	+ 1.8 —	4.8	+ 0.9 —	
	Percentage deviation.	+3.9% —		+8.9% —		18.7%		

TABLE No. 7.

*Statement of cost of feed per animal per day for the year 1-9-45 F. to 31-8-46 F.*

Serial No.	Class of animal	Concentrates	Cost of		Total cost of feeding per day
			Hay	Green fodder	
1	Krishna Valley Bull ..	0 4 10	0 1 0	0 0 6	0 6 4
2	Malvi Bull ..	0 3 5	0 1 0	0 0 6	0 4 11
3	Murrah Buffalo Bull ..	0 2 11	0 1 6	0 0 6	0 4 11
4	Cow yielding 10-15 lbs. ..	0 5 0	0 0 10	0 0 9	0 6 7
5	Do 5 -10 lbs. ..	0 4 4	0 0 10	0 0 9	0 5 11
6	Do 3 - 5 lbs. ..	0 3 6	0 0 10	0 0 9	0 5 1
7	Do 1 - 3 lbs. ..	0 3 1	0 0 10	0 0 9	0 4 8
8	Dry cows ..	0 2 3	0 0 10	0 0 6	0 3 7
9	Down calvers ..	0 5 6	0 1 0	0 0 6	0 6 1
10	Buffaloes yielding 10 to 15 lbs.	0 9 4	0 1 3	0 0 9	0 11 4
11	Buffaloes yielding 5 to 10 lbs.	0 7 10	0 1 3	0 0 9	0 9 10
12	Dry Buffaloes ..	0 3 3	0 1 0	0 0 9	0 5 0
13	Young stock over two years.	0 3 6	0 0 6	0 0 3	0 4 3
14	Young stock one year to two years ..	0 2 6	0 0 6	0 0 3	0 3 3

TABLE No. 8 (A).

*Annual statement showing the lactation period, milk yield, dry period and service periods of the animals in Krishna valley breed that went dry during the year 1845 —1846 F.*

Se- rial No.	Brand No.	Lacta- tion period	Service period	Gesta- tion period	Milk yield lbs. Oz.	Daily average	Remarks
1	28	216	..	133	2,291 8	10.6	
2	95	402	363	..	3,431 8	8.5	
3	81	311	161	145	3,910 0	12.5	
4	37	265	..	84	1,924 8	7.2	
5	30	443	245	..	3,382 0	7.6	
6	99	188	40	126	1,325 8	7.0	
7	23	369	166	..	1,879 0	5.0	
8	4	23	..	..	35 0	1.5	Calf died when 14 days old.
9	103	211	115	..	1,215 8	5.8	
10	86	202	96	..	1,226 8	6.0	
11	85	166	152	..	1,009 0	6.0	
12	28	61	..	..	403 8	6.6	Met an accident when fresh (50 days).
13	38	250	..	..	1,325 0	5.3	
14	3	301	153	..	2,454 8	8.1	
15	97	296	101	..	2,354 8	7.9	
16	39	299	196	46	2,026 8	6.7	
17	6	247	165	..	1,740 0	7.0	
18	26	270	161	..	1,967 0	7.2	
19	84	188	..	..	1,265 8	6.7	
20	33	20	..	..	38 0	1.9	Calf died when four days old.
21	20	362	215	..	2,291 8	6.3	
22	7	306	157	..	1,739 0	1.7	
23	37	239	134	..	789 0	2.2	
24	1	220	44	..	732 0	3.6	Calf died when 34 days old.

1. Average lactation period 281.5 days (2) verage service period 163.7 days
- (3) Average gestation period 106.8 days (4) average milk yield (1927.4 pounds)
- (5) Average daily yield 7.0 lbs.



TABLE No. 8 (B).

*Annual statement showing the lactation period, milk yield, period of the animals in the Malvi breed that went dry during Fasli.*

Se- rial No.	Brand No.	Lacta- tion Period	Service period	Gesta- tion Period	Milk yield lbs. Oz.	Dail avera
1	46	384	249	120	2,757 0	7.
2	44	275	36	48	960 0	3.
3	66	273	97	110	2,448 0	8.
4	48	230	77	129	1,471 8	6.
5	42	216	81	151	853 8	3.
6	53	159	34	159	747 8	4.
7	109	121	32	Yet dry	331 8	3.
8	114	20	..	..	23 0	1.
9	78	244	83	125	1,064 8	4.
10	108	325	..	99	2,790 8	8.
11	72	128	238	Yetdry	378 8	3.
12	116	..	..	17	..	..
13	71	248	..	Yetdry	1,390 8	5.
14	100	374	82	do	2,962 0	8.
15	57	258	157	do	1,701 0	6.
16	114	307	132	do	3,036 8	9.
17	101	274	279	do	1,729 8	6.
18	44	218	192	do	1,052 8	4.
19	102	198	..	do	1,242 8	6.
20	64	245	..	do	2,326 8	9.
21	115	281	219	do	1,940 8	6.
22	42	153	88	do	639 8	4.
23	110	424	298	do	3,276 8	7.
24	76	339	..	do	2,564 8	7.
25	106	284	121	do	2,105 0	7.

- (1) Average lactation period 265.3 days (2) Average service  
 (3) Average gestation period 117.6 days (4) Average milk yi  
 (5) Average daily yield. 6.7 pounds.

TABLE No. 8 (C).

*Annual statement showing the lactation period, milk yield, dry period and service periods of the animals in murrah buffaloes breed that went dry during the year 1345 F.—1346 F.*

Serial	Brand No.	Lactation period	Service period	Gestation period	Milk yeild lbs. Ozs.	Daily average
1	4	664	517	201	8,033 0	12.1
2	15	287	..	161	1,949 0	8.2
3	5	223	122	..	2,066 8	9.2
4	6	228	..	..	2,378 8	10.4
5	13	256	42	107	2,929 8	11.4
6	20	377	..	..	4,912 8	13.0

Average lactation period .. 330.8 Days.  
 Do Service period .. 170 Days.  
 Do Gestation period .. 156.3 Days  
 Do Milk yield .. 3,711.5 Pounds.  
 Do Daily yield .. 11.2 Pounds.

TABLE No. 9.

*Statement showing monthly maximum and minimum daily yields for the years 1345 F.-1346 F.*

Serial No.	Month	KRISHNA VALLEY			MALVI			MURRAH BUFFALOES			
		Total monthly yield in lbs.	Daily maximum yield during the month	Daily minimum yield during the month	Total monthly yield in lbs.	Daily maximum yield during the month	Daily minimum yield during the month	Total monthly yield	Daily maximum yield during the month	Daily minimum yield during the month	Butter yield out of surplus mixed milk
1	Amardad 1345 F.	4,708½	164	137	2,938½	107½	80½	1,535½	42	37½	68 1
2	Sherevar 1345 F.	4,155	163	119	3,481	125	88	1,124½	44	29	55 13
3	Mehir 1345 F.	4,309	160	121	4,173	154½	123½	1,288	51	26½	51 9
4	Aban 1345 F.	4,832	172	151	4,493½	157½	141½	1,403½	57½	34½	52 0
5	Azur 1346 F.	4,891	186	151½	4,592½	164	127	1,056½	46	25½	55 10
6	Dai 1346 F.	4,525	181½	117	4,613	184½	124½	1,175½	46½	25	60 11
7	Bahman 1346 F.	5,226½	183½	125½	4,826	173	129	1,723½	62½	51½	101 0
8	Isfandar 1346 F.	5,027½	182½	151½	4,815½	174	150	1,620½	65½	46½	106 11
9	Farwardi 1346 F.	5,077	174½	149½	2,322	172	122	1,835	66	48	126 4
10	Ardebahist 1346 F.	4,578½	173½	126½	3,764	160	88	2,005	75	55	81 8
11	Khurdad 1346 F.	5,072	188	147½	3,950	147½	115	1,968½	70½	53	116 14
12	Tir 1346 F.	5,101½	184½	135	3,794½	130	94½	1,611½	57½	45	87 7

Statement of Comparison of Dam's with their Daughters in Respect of Milk yield.

Breed	Serial No.	Brand No.	DAM'S LACTATIONS												6TH LACTATION		
			1ST LACTATION			2ND LACTATION			3RD LACTATION			4TH LACTATION			5TH LACTATION		
			Total yield	Daily average	Total yield	Total yield	Daily average	Total yield	Total yield	Daily average	Total yield	Total yield	Daily average	Total yield	Total yield	Daily average	Daily average
Krishna valley	1	5	..	..	1,925	6.9	1,710 $\frac{1}{2}$	7.2	1,539	6.7	281	1.6	860 $\frac{1}{2}$	3.9	..	..	..
Do	2	18	..	..	1,529 $\frac{1}{2}$	5.2	1,325 $\frac{1}{2}$	9.5	1,325 $\frac{1}{2}$	9.0	987	6.8	2,201 $\frac{1}{2}$	6.3	..	..	..
Do	3	20	..	..	1,954 $\frac{1}{2}$	5.2	1,358 $\frac{1}{2}$	4.4	1,304 $\frac{1}{2}$	7.2	*	..	237 $\frac{1}{2}$	2.9	..	..	..
Do	4	33	..	..	585	3.4	1,358 $\frac{1}{2}$	4.4	1,304 $\frac{1}{2}$	7.2	*	..	..	..	..	..	..
Do	5	34	..	..	1,154 $\frac{1}{2}$	6.0	1,304 $\frac{1}{2}$	7.2	1,304 $\frac{1}{2}$	7.2	*	..	..	..	..	..	..
Total	..	..	..	..	5,619	21.5	9,807	36.0	7,401 $\frac{1}{2}$	31.6	3,900 $\frac{1}{2}$	15.7	3,389 $\frac{1}{2}$	13.1	..	..	..
Total yield of lactations not normal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total yield of normal lactations	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Number of normal lactations	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Averages	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Malvi	1	46	..	..	* 246	3.5	2,935	8.2	2,400	8.3	2,757	7.1	..	..	..	..	..
Do	2	48	..	..	1,268 $\frac{1}{2}$	4.0	1,380	6.8	1,471 $\frac{1}{2}$	6.3	..	..	..	..	..	..	..
Do	3	50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do	4	52	..	..	1,162	6.5	..	..	..	..	..	..	..	..	..	..	..
Do	5	58	..	..	790	3.6	241	3.0	* 60 $\frac{1}{2}$	2.8	..	..	..	..	..	..	..
Do	6	62	..	..	2,980	9.5	2,128	8.3	338	7.4	..	..	..	..	..	..	..
Do	7	66	..	..	2,919 $\frac{1}{2}$	10.8	2,784 $\frac{1}{2}$	8.7	2,448	8.9	..	..	..	..	..	..	..
Do	8	67	..	..	2,128	8.5	2,717 $\frac{1}{2}$	11.0	* 307 $\frac{1}{2}$	7.3	* 755	7.4	..	..	..	..	..
Do	9	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Do	10	46	..	..	* 246	3.5	2,935	8.2	2,400	8.3	2,757	7.1	..	..	..	..	..
Grand Total	..	..	2,186	5.5	11,739	40.9	15,121	52.2	9,545 $\frac{1}{2}$	49.3	6,269	21.6	..	..	..	..	..
Total yield of lactations not normal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total of normal lactations	..	..	2,186	5.5	10,085	36.4	15,121	52.2	9,177	39.2	5,514	14.2	..	..	..	..	..
No. of do	..	1	1	5	5	5	7	5	5	5	2	2	..	..	..	..	..
Averages	..	2,	2,186	5.5	2,017	7.3	216.14	7.5	1835.4	7.8	2,757	7.1	..	..	..	..	..

NB.—The milk yield of a cow in 4th lactation is generally considered to be the best performance. But as the ranks of the calvings of the dams are not reliable the average of the available lactation figures is taken to represent the best performance of the dams. It may be noted here that the daughter's average is mostly either equal to their dam's average or even above that.



TABLE No. 11.

Statement showing the receipt and disposal of milk and milk products for the year 1345 — 1346 F.

Serial No.	Months	Open- ing ba- lance	MILK						EXPENDITURE				Clos- ing ba- lance	SEPERATED MILK		
			RECEIVED FROM CATTLE YARD									Loss		Farm stock	Outturn	Farm stock
			Cow's milk in lbs.	Buffaloe's milk in lbs.	Cow's milk sold in lbs.	Buffaloe's milk sold in lbs.	Separation	Farm stock								
1	2	3	4	5	6	7	8	9	10	11	12	13				
1	Amardad 1345 F.	7	7,638- 0	1,535- 8	3,054- 0	1,208- 0	1,685- 0	2,957- 0	186- 8	..	1,592-14	1,592-14				
2	Sherewar 1345 F.	..	7,647- 0	1,116- 0	3,180- 0	1,155- 8	1,251- 0	3,040- 0	186- 8	..	1,181- 4	1,181- 4				
3	Mehir 1345 F.	..	8,462- 0	1,281- 8	3,480- 8	1,028- 8	1,219- 8	3,885- 0	180- 0	..	1,147-14	1,147-14				
4	Aban 1345 F.	..	9,354- 8	1,405- 8	3,458- 0	930- 0	1,313- 8	4,864- 0	180- 0	14- 8	1,232-14	1,232-14				
5	Azur 1346 F.	14½	9,484- 8	1,054- 0	3,316- 8	820- 8	1,381- 8	4,838- 0	194- 0	2- 8	1,318- 3	1,318- 3				
6	Dai 1346 F.	2½	9,146- 0	1,145- 0	3,092- 0	835- 0	1,517- 8	4,673- 0	176- 0	..	1,438- 9	1,438- 9				
7	Bahman 1346 F.	..	10,055- 0	1,710- 8	2,928- 0	884- 8	2,527- 8	5,245- 0	180- 8	..	2,363- 6	2,363- 6				
8	Isfandar 1346 F.	..	9,848- 0	1,606- 8	2,829- 0	809- 8	2,176- 0	5,400- 0	240- 0	..	2,046- 0	2,046- 0				
9	Farwardi 1346 F.	..	9,354- 8	1,892- 0	2,939- 8	802- 0	2,845- 8	4,464- 8	195- 0	..	2,076-14	2,076-14				
10	Ardibehist 1346 F.	..	8,342- 8	1,993- 8	2,850- 8	940- 0	1,773- 8	4,556- 0	216- 0	..	1,665-10	1,665-10				
11	Khurdad 1346 F.	..	9,023- 8	1,909- 0	2,613- 8	835- 0	2,653- 8	4,642- 8	248- 0	..	2,491- 6	2,491- 6				
12	Tthir 1346 F.	..	8,902- 0	1,717- 8	2,525- 8	862- 8	1,623- 8	5,024- 0	384- 0	..	1,713-14	1,713-14				
1-9-45 F. to 31-8-46		7	1,07,257- 8	18,426- 8	36,167- 0	11,201- 0	22,167- 8	53,589- 0	2,566- 8	..	20,871-12	20,871-12				

TABLE No. 11.

Statement showing the receipt and disposal of milk and milk products for the year 1345—1346 P.—(concl'd.)

Serial No.	Months	CREAM					BUTTER					GHEE						
		EXPENDITURE					EXPENDITURE					EXPENDITURE						
		Opening balance	Outturn	Sales	Churning	Loss	Closing balance	Opening balance	Outturn	Sales	Ghee making	Loss	Closing balance	Opening balance	Outturn	Sales	Loss	Closing balance
1	2	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	Anarlad	17-10	92-2	1-14	95-8	..	12-6	31-4	68-1	85-7	..	..	13-14	1-8	..	..	..	1-8
2	Sherewar	..	69-12	0-14	81-4	..	..	13-14	55-13	64-4	..	..	5-7	1-8	..	..	..	1-8
3	Mehir	..	71-10	0-8	71-2	..	..	5-7	51-9	50-0	..	..	7-0	1-8	..	0-4	..	1-4
4	Aban	..	80-10	1-4	72-12	..	6-10	7-0	52-0	48-11	..	..	10-5	1-4	..	..	..	1-4
5	Azur	..	63-5	2-9	62-14	..	4-8	10-5	55-10	56-2	..	..	9-13	1-4	..	..	..	1-4
6	Dai	..	78-15	1-10	78-9	..	3-4	9-13	60-11	65-9	..	..	14-5	1-4	..	..	..	1-4
7	Bahman	..	164-2	2-0	148-14	..	16-8	14-5	101-0	65-9	..	..	49-12	1-4	..	..	..	1-4
8	Isfandar	..	130-0	1-0	137-0	..	8-8	49-12	106-11	67-3	..	..	89-4	1-4	..	..	..	1-4
9	Farwardi	..	168-10	3-4	156-12	..	15-6	89-4	126-4	82-4	..	6-12	126-8	1-4	41-4	35-0	0-8	7-0
10	Ardib'st	..	107-14	3-0	106-6	1-12	13-14	126-8	81-8	55-10	55-8	..	96-14	7-0	..	..	..	7-0
11	Khurdad	..	159-2	6-0	157-2	..	9-14	96-14	116-14	97-5	..	..	116-7	7-0	..	3-0	4-0	..
12	Tir	..	109-10	10-10	118-14	..	..	116-7	87-7	39-2	..	..	164-12	..	..	..	..	..
19-45 F.		17-10	1295-12	24-9	1287-1	1-12	..	31-4	963-8	767-12	55-8	6-12	164-12	1-8	41-4	38-4	4-8	..

TABLE No. 12.

Table showing the crops grown, acreage under them and other details for the year 1885 F. to 1846 F.

Serial No.	Acres	Guntas	Variety of fodder	Outturn in lb	Outturn per acre in lb	Cost of cultivation Rs.	Cost per Acre Rs.	Approximate cost per 1000 lb Rs.	Remarks
1	7	30	Lucerne	2,15,946	27,864	1,298 14 6	167 9 6	7 0 3	Settings enough for 1½ acres.
2	4	10	Guinea grass	87,038	20,479	496 9 6	105 1 3	5 11 3	
3	3	20	Rhodes grass	72,980	20,851	213 1 0	60 14 0	3 0 10	
4	..	10	Kudzu Vine	..	..	..	..	..	Settings enough for 1½ acres.
5	8	..	Oats and Peas	28,903	3,613	86 15 8	10 13 11	2 15 11	Green manuring.
6	8	7	Sann Hemp	25,952	3,174	89 4 2	10 11 7	..	
7	8	20	Sunflower and mixture	68,996	8,117	90 8 3	10 10 4	1 15 0	
8	2	..	Sunflower and mixture	4,000	2,000	16 2 1	8 1 0	4 0 6	*Grazed.
9	3	..	Maize and maize mixtures	85,689	6,045	259 9 4	18 3 3	3 0 3	
9	34	6	Maize and maize mixtures	3,000	1,000	15 7 3	5 2 5	5 2 5	*Grazed.
9	16	37	Juvar and juvar mixtures	2,85,268	7,286	742 15 6	18 15 0	2 9 8	
10	..	30	Juvar and swank mixtures	16,750	1,000	76 9 7	4 8 5	4 6 2	*Grazed.
10	13	25	Swank and swank mixtures	2,900	3,866	4 14 9	6 9 0	1 11 2	
11	..	..	Swank and swank mixtures	6,750	500	44 8 9	3 5 9	6 5 10	*Grazed.
12	..	..	Green grass	76,428	..	..	..	..	*Grazed.
13	..	..	Hay	..	..	..	..	..	
13	..	..	Hay	6,90,607	..	..	..	6 8 0	

N.B.—Juvar and Maize were mixed with Legumes like Cowpea, Field pea, Tur and Gavar.  
\* Estimated quantities.



TABLE No. 13.

*Statement showing the sales and distribution of Fodder crop seeds for the year 1345 Fasli-1346 Fasli.*

Serial No.	Supplied to	Imphi seeds	Rhodes grass sets	Ballar seeds
		lbs.	Sets	
1	Agricultural Officer, Medak. ..	170	..	..
2	Agricultural Officer, Bagat ..	50	..	..
3	Superintendent, Sewerage Farm, C.I.B. ..	128	..	..
4	Superintendent, Sangareddi Farm ..	60	3,000	..
5	Agricultural Kamgar, Alampur ..	10	..	..
6	Agricultural Kamgar, Sedam. ..	80	..	..
7	Rajanna .. ..	32	..	..
8	Gubba Ram Lingiah .. ..	..	..	1,135½
9	Agricultural Inspector, Thirthally, Mysore State .. ..	100	..	..
	Total	630	3,000	1,135½

TABLE No. 14.

*Statement showing the outturn of seeds and Kadbi of Fodder crops for the year 1345-1346 Fasli.*

Serial No.	Name of seed produced			OUTTURN		Remarks
				Seeds	Kadbi	
1	Imphi Jowar	..	..	3,672	29,864	
2	Yellow Jowar	..	..	174	25,446	
3	Sundia Jowar	..	..	288	17,810	
4	Nilva Jowar	..	..	..	8,686	
5	Maize	..	..	466	5,918	
6	Sunflower (Russian)		..	352	..	
	Sunflower (Single Head)		..	32	..	
	Sunflower (Multiple Head)		..	7	..	
7	Sann Hemp	..	..	750	..	
8	Swank	..	..	276	..	
9	Gavar	..	..	9	..	
10	Ballar	..	..	1,173	..	
11	Cowpea	..	..	41	..	
12	Oats	..	..	2,916	..	

TABLE No. 15.

*Silage manufactured and consumed in the Farm**for the year 1845 F.-1846 F.*

Variety of fodder ensilaged			Pit No. I	Pit No. II
				lbs.
Maize and maize mixtures	..	..	..	11,140
Juvar and juvar mixtures	..	..	76,782	35,048
Sun Flower	..	..	..	10,058
Sann hemp tops	..	..	18,318	7,634
Green grass	..	..	866	..
Total			95,966	63,880
Quantity obtained from pit	..	..	73,036	53,732
Loss due to shrinkage and mouldiness	..	..	22,930	10,148
Percentage loss	..	..	23.8%	15.8%
Average per cent. loss	..	..	20.7%	

*N.B.*—Pit No.II was opened in the beginning of Amardad 1846 F.

TABLE No. 16.

*The statement showing the number of hours worked by the various plant and machinery during the year 1345-1346 Fash.*

Serial No.	Months	No. OF HOURS WORKED BY THE PLANTS							
		Boiler	Steam engine	Refrigerator	Pumping set	Electric plant	Chaff cutter's oil engine	Chaff cutter	Crusher & grinder
1	Amardad 45 F.	297½	263½	263½	170	107½	..	..	..
2	Sherewar 45 F...	303½	275½	275½	195	107	..	..	..
3	Mehir 45 F. ..	321½	259	259	152½	108	..	..	..
4	Aban 45 F. ..	335½	280	280	160	119½	12½	..	..
5	Azur 46 F. ..	317½	262	262	159½	127½	84	64	17
6	Dai 46 F. ..	304½	250	250	145	124½	135	117	18
7	Bahmon 46 F. ...	328	265½	265½	155	122½	25½	25½	..
8	Isfandar 46 F. ...	304	241	241	157½	123	14½	12½	2
9	Farwardi 46 F.	338	253	253	167½	132½	10	10	..
10	Ardibehist 46 F.	338	264½	264½	165	131½	13	13	..
11	Khurdad 46 F.	328	254	254	157½	130	9	9	..
12	Thir 46 F. ..	329	242	242	172½	126	..	..	..
	Total No. of hours worked during the year 45 -46 F.	3,842	3,099½	3099½	1,957½	1,459½	303½	251	37

TABLE No. 17.

*Statement of Income for the year 1345 F. to 1346 F.*

Serial No.	Articles			Amount			Remarks
				Rs.	A.	P.	
1	Sowing seeds	..	..	75	1	0	
2	Hay	..	..	30	0	0	
3	Dairy produce	..	..	6,509	10	0	
4	Bottles	..	..	2	0	0	
5	Compost manure	..	..	11	0	0	
6	Sales of animals	..		371	0	0	
7	Miscellaneous	..	..	98	1	5	
	Total			7,096	12	5	

*Programme of work of the Cattle Breeding Farm and  
Dairy, Himayatsagar, Hyderabad-Deccan,  
for the year 1346-47 Fasli.*

1. Breeding operation will continue on the same principle as previous years.
2. Building of pedigree herds by weeding out of young stock which are not true to type, colour, etc.
3. Effect of castration at different ages from 2 years and six months and upwards on the development and growth.
4. Distribution of breeding bulls through the Veterinary Department.
5. Weeding out of adult stock which do not come up to the milk standard.
6. Holding of Demonstrations.
7. Supply of pasteurised milk, butter and cream to the public will be continued.
8. In the Agricultural section Fodder crops, Berseem, Lucerne, Gram, Gawar and cultivated grasses, viz., Rhodes and Guinea grass will be grown. Growing of different kinds of Jowar, Imphi, Maize and Oats will be continued. Kudzu Vine cultivation will be extended. Cultivation of different types of Sun flower as fodder crops will be carried on a large scale.

(Sd.) V. S. RAMA RAO,  
*Superintendent.*

*Annual Report of the Government Poultry Farm,  
Himayatsagar, for the year 1345-1346 F.*

1. *Introduction.*—As a result of the Poultry Survey of His Exalted Highness the Nizam's Dominions, this Poultry Farm was started during the winter of 1340 F. (December 1930).

2. *Situation.*—The Farm is situated in the area of the Main Agricultural Experimental Farm, Himayatsagar which lies on the Hyderabad-Himayatsagar road at a distance of 9 miles from the Broad Gauge and 12 miles from Metre Gauge Railway Stations of Hyderabad Town on His Exalted Highness the Nizam's Railways.

3. *Object.*—Main object of the farm consists in finding out a suitable breed for the climate of the Dominions and to demonstrate the improved methods of Poultry raising.

4. *Breeds.*—Four pure breeds, namely, White Leghorn, Rhode Island Reds, Australorps and Hyderabad Asseels are maintained on the farm since its start. In addition to this, a pen of Selected Local birds started during the year 1342 F. is also being maintained with the object of evolving a Local Barred breed capable of serving the dual purpose of laying eggs and table use.

A trio of Black Minorcas, Light Sussex and Rhode Island Reds of Slater's strain is also introduced last year.

*White Leghorns.*—There were 5 cocks, 16 hens and 15 chickens on the farm at the beginning of the year under review. During the year 6 cocks bred on the farm were added to the adult stock and 22 chickens of this breed were raised on the farm.

Out of the adult stock 7 cocks and 6 hens were sold, 2 hens died of disease, and 3 deaths were among chickens. So at the close of the year there were 4 cocks, 8 hens and 13 chickens on the farm. The death rate was less this year, both in adults and chickens, as compared with that of last year's. The percentage of deaths over total stock was 10.2.

*Rhode Island Reds (U.P.).*—At the beginning of the year there were 1 cock, 9 hens and 15 chickens on the farm. During the year 8 cockerels and 2 pullets bred on

the farm were added to the adult's stock and 33 chickens were raised on the farm.

Out of the adult stock, 3 cocks, 3 hens and 2 chickens were sold, 3 cocks and 1 hen died of disease, and 5 deaths in the chickens. So at the close of the year there were 3 cocks, 7 hens and 16 chickens on the farm. General health of the stock was fair. The percentage of deaths over total stock was 16.9.

*Australorps*.—There were 3 cocks, 5 hens and 30 chickens at the beginning of the year. During the year 15 cockerels and 12 pullets bred on the farm were added to the adult stock, and 47 chickens were raised on the farm.

Out of the farm stock, 11 cocks, 2 hens, 5 chickens were sold and there were 5 deaths in the chickens. So at the end of the year there were 7 cocks, 15 hens and 10 chickens.

The birds maintained good health. The percentage of death over total stock of chickens was 10.6.

*Asseels*.—At the beginning of the year there were 1 cock, 3 hens and 1 chicken on the farm. During the year 3 pullets bred on the farm were added to the adult stock and 7 chickens were raised on the farm. There was no death in adults but one chicken died.

So at the close of the year there were 1 cock, 6 hens and 3 chickens on the farm. The percentage of adult over total stock was 14.2.

*Local Barred*.—There were 1 cock, 11 hens and 6 chickens at the beginning of the year. During the year under review, 2 cockerels bred on the farm were added to the adult stock, and 3 cockerels and 2 pullets which were not fit for breeding due to their undesirable colour were discarded and added to the Country Local stock, and 2 chickens of undesirable colour were sold. 1 cock and 5 chickens died. So at the end of the year there were 2 cocks, 11 hens, and 8 chickens on the farm.

The death percentage of adults was 7.1 and of chickens 22.72.

*Black Minorcas*.—There were 10 cocks, 10 hens and 7 chickens on the farm. 1 cockerel and 2 pullets were



added to adult stock and 13 chickens were raised on the farm.

Out of the adult stock 9 cocks were sold 2 hens and 6 chickens died. So at the end of the year there were 2 cocks 10 hens and 4 chickens on the farm.

The death percentage of adult was 8.7 and that of chickens 46.1.

*Light Sussex*.—There were 3 cocks, 10 hens, and 11 chickens on the farm. 6 cockerels were added to adult stock and 22 chickens were raised on the farm.

Out of the adult stock 7 cocks and 3 chickens were sold. 1 cock, 5 hens, 3 chickens died during the year. So at the end of the year there were 1 cock, 5 hens and 10 chickens on the farm.

The death percentage of adult was 31.6 and that of chickens 13.6.

*Rhode Island Reds (Slater's Strain)*.—There were 6 cocks 10 hens and 8 chickens of this breed on the farm. 2 cockerels and 5 pullets were added to adult stock and 20 chickens were raised on the farm.

Out of the adult stock one cock and one hen were sold. 1 hen and 2 chickens died during the year. So at the end of the year, there were 7 cocks, 13 hens and 11 chickens on the farm.

The death percentage of adult was 4.3 and that of chickens 10.

*Laying Record*.—The average yield per bird per year was as follows:—

1. White Leghorn	..	..	91.76
2. Rhode Island Reds (U.P.)	..	..	56.9
3. Australorps	..	..	70.2
4. Asseels	..	..	27.3
5. Local Barred	..	..	51.8
6. Black Minorcas	..	..	97.8
7. Light Sussex	..	..	43.5
8. Rhode Island Reds (Sl.)	..	..	52.8

All birds were trap nested.

*Breeding.*—One Hereson's Incubator of the capacity of 60 eggs was kept on the farm and put to use. During the year under review 244 eggs were set in the machine as follows:—

<i>Breed.</i>	<i>No. of eggs.</i>
1. White Leghorn .. ..	20
2. Rhode Island Reds (U.P.) ..	46
3. Australorps .. ..	40
4. Local Barred .. ..	32
5. Black Minorca .. ..	24
6. Light Sussex .. ..	30
7. Rhode Island Reds (Slaters) ..	34
8. Asseel .. ..	18
	<hr/>
	244
	<hr/>

The total hatch was 93 chickens. The hatchability over fertile was as follows:—

1. White Leghorn .. ..	58.3
2. Rhode Island Reds (U.P.) ..	64.2
3. Australorps .. ..	68.0
4. Local Barred .. ..	66.6
5. Black Minorca .. ..	50.0
6. Light Sussex .. ..	57.8
7. Rhode Island Reds (Slater's..)	60.0
8. Asseel .. ..	46.1

The total hatchability over total fertiles was 60.8 and 9 eggs were set under hen out of which all hatched out.

*Diseases and Deaths.*—Statements I and II show the deaths under each disease.

*Apparatus, Etc.*—13 new trap nests were prepared. 8 feeding troughs were also added to the stock. One cold brooder was newly made.

*Runs and Houses.*—12 Small runs and 2 big ones were made. 12 small houses and 2 big houses were constructed. A shed 12'×12'×10' was transferred from the Mahbubnagar farm and erected in the poultry farm for storing grain and other poultry feed.

*Finances.*—The total amount of expenditure during the year under review was O.S. Rs. 2177-4-0 and the income amounted to O.S. Rs. 476-1-0.

*Charge and Establishment.*—Mr. A. T. Deshmukh, Poultry Assistant remained in charge throughout the year and worked satisfactorily.

*Miscellaneous.*—Poultry Shows were arranged in the Agricultural demonstrations held on the farms and also in the Horticultural and Poultry Shows at Hyderabad. Advice on various matters was always freely given to all those interested in the industry.

(Sd.) A. MAJID,  
*Deputy Director of Agriculture,*  
*Western Telingana Division,*  
*Himayatsagar, Hyderabad-Deccan.*  
 17-12-1346 F.



## STATEMENT

*Mortality in the Adult stock at Poultry Farm, Himayat*

Breed	Total stock	WEAKNESS & ANEMIA		COLD		GREEN DIARRHOEA	
		No.	Percent- age over total stock	No.	Percent- age over total stock	No.	Percent- age over total stock
1. White Leghorn ..	27	..	..	1	3.7	..	..
2. Australorps ..	35	..	..	..	..	..	..
3. Rhode Island Reds (U.P.)	20	..	..	1	5	..	..
4. Rhode Island Reds (Sl.) .	23	..	..	1	4.3	..	..
5. Local Barred ..	14	..	..	..	..	..	..
6. Black Minorcas ..	23	..	..	1	4.34	..	..
7. Light Sussex ..	19	..	..	2	10.52	..	..
8. Asseel ..	7	..	..	..	..	..	..
9. Country Local ..	12	..	..	..	..	..	..
Total ..	180	..	..	6	..	..	..

No. I.

*sagar, during the year 1345—1346 Fasli.*

COCCODIOSES		HEAT STROKE		CHICKEN-POX		OTHER MALADIES		Total number of deaths	Percentage of total deaths over total stock
No.	Percent- age over total stock	No.	Percent- age over total stock	No.	Percent- age over total stock	No.	Percent- age over total stock		
..	..	..	..	..	..	1	3.7	2	7.4
..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	3	15	4	20
..	..	..	..	..	..	..	..	1	4.8
..	..	..	..	..	..	1	7.1	1	7.1
..	..	..	..	..	..	1	4.34	2	8.7
..	..	..	..	..	..	4	21.04	6	31.6
..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	2	16.8	2	16.8
..	..	..	..	..	..	12	..	18	10

## STATEMENT

*Mortality in Chickens at Poultry Farm, Himayatsagar.*

Breed	Total	CHICKEN-POX		COLD & ROUP		WEAKNESS	
		No.	Percent- age over total stock	No.	Percent- age over total stock	No.	Percent- age over total stock
1. White Leghorn ..	22	..	..	..	..	..	..
2. Australorps ..	47	2	4.2	..	..	..	..
3. Rhode Island Reds (U.P.)	33	2	6	..	..	..	..
4. Rhode Island Reds (Sl.)..	20	..	..	1	5	..	..
5. Local Barred ..	22	1	4.54	4	18.1	..	..
6. Light Sussex ..	22	1	4.54	..	..	..	..
7. Black Minorcas ..	18	..	..	2	15.3	..	..
8. Asseel ..	7	..	..	1	14.2	..	..
Grand Total ..	186	6	..	8	..	..	..

## No. II.

during the year 1345—1346 Fasli.

WHITE DIARRHOEA		HEAT STROKE		COCCIDIOSIS		OTHER MALADIES		Total number of deaths	Percentage of total deaths to total stock
No.	Percent- age over total stock	No.	Percent- age over total stock	No.	Percent- age over total stock	No.	Percent- age over total stock		
1	4.5	..	..	1	4.5	1	4.5	3	13.6
..	..	..	..	..	..	3	6.3	5	10.6
..	..	..	..	..	..	3	9	5	15.1
..	..	..	..	..	..	1	5	2	10
..	..	..	..	..	..	..	..	5	22.72
..	..	..	..	..	..	2	9	3	13.6
..	..	..	..	1	7.6	3	23	6	46.1
..	..	..	..	..	..	..	..	1	14.2
1	..	..	..	2	..	13	..	30	16.1



## STATEMENT No.

*The Strength of flock at the Government Poultry Farm, Himaya*

Serial No.	Breed and Class of birds	Balance at the end of last year	ADDITIONS			
			Pur-chases	Trans-fers	Births	Total
1	White Leghorn.—					
	(a) Cocks .. ..	5	..	6	..	6
	(b) Hens .. ..	16	..	..	..	..
	(c) Chickens .. ..	15	..	..	7	7
2	Rhode Island Reds (U. P.)					
	(a) Cocks .. ..	1	..	8	..	8
	(b) Hens .. ..	9	..	2	..	2
	(c) Chickens .. ..	15	..	..	18	18
3	Rhode Island Reds (Sl.)					
	(a) Cocks .. ..	6	..	2	..	2
	(b) Hens .. ..	10	..	5	..	5
	(c) Chickens .. ..	8	..	..	12	12
4	Australorps .. ..					
	(a) Cocks .. ..	3	..	15	..	15
	(b) Hens .. ..	5	..	12	..	12
	(c) Chickens .. ..	30	..	..	17	17
5	Black Minorcas .. ..					
	(a) Cocks .. ..	10	..	1	..	1
	(b) Hens .. ..	10	..	2	..	2
	(c) Chickens .. ..	7	..	..	6	6
6	Light Sussex .. ..					
	(a) Cocks .. ..	3	..	6	..	6
	(b) Hens .. ..	10	..	..	..	..
	(c) Chickens .. ..	11	..	..	11	11
7	Local Barred.					
	(a) Cocks .. ..	1	..	2	..	2
	(b) Hens .. ..	11	..	..	..	..
	(c) Chickens .. ..	6	..	..	16	16
8	Country Local.					
	(a) Cocks .. ..	..	..	3	..	3
	(b) Hens .. ..	7	..	2	..	2
	(c) Chickens .. ..	..	..	..	..	..
9	Asseels.					
	(a) Cocks .. ..	1	..	..	..	..
	(b) Hens .. ..	3	..	3	..	3
	(c) Chickens .. ..	1	..	..	6	6
	Total .. ..	204	..	69	93	162

*Note.*—Death percentage over grand total was 13.1

## III.

sagar, during the year 1345—1346 Fasli.

Grand total	DISPOSALS				Balance at the end of this year	Remarks
	Sale	Transfers	Deaths	Total		
11	7	..	..	7	4	
16	6	..	2	8	8	
22	..	6	3	9	13	
9	3	..	3	6	3	
11	3	..	1	4	7	
33	2	10	5	17	16	
8	1	..	..	1	7	
15	1	..	1	2	13	
20	..	7	2	9	11	
18	11	..	..	11	7	
17	2	..	..	2	15	
47	5	27	5	37	10	
11	9	..	..	9	2	
12	..	..	2	2	10	
13	..	3	6	9	4	
9	7	..	1	8	1	
10	..	..	5	5	5	
22	3	6	3	12	10	
3	..	..	1	1	2	
11	..	..	..	..	11	
22	2	7	5	14	8	
3	..	..	..	..	3	Transferred from Loca Barred.
9	..	..	2	2	7	
..	..	..	..	..	..	
1	..	..	..	..	1	
6	..	..	..	..	6	
7	..	3	1	4	3	
366	62	69	48	179	187	

during the year under review.

## STATEMENT No.

*Receipts and disposal of Eggs at Poultry Farm, Himayatsagar,*

Name of breed	RECEIPTS DURING THIS YEAR			Grand Total
	Balance at the end of the last year	Laid by hens	Purchased	Total
White Leghorn .. ..	..	612	..	612
Australorps .. ..	..	696	..	696
Rhode Island Reds (U. P.) ..	} ..	887	..	887
Rhode Island Reds (Sl.) ..				
Black Minorcas .. ..	..	626	..	626
Light Sussex .. ..	..	326	..	326
Asseels .. ..	..	82	..	82
Local Barred .. ..	..	223	..	223
Mixed (Miscellaneous) ..	55	254	..	309
Grand total ..	55	3,706	..	3,761

## IV.

during the year 1345—1346 *Fashi*.

DISPOSAL DURING THIS YEAR				Balance at the end of this year	Remarks
Set for hatch- ing	Sold for hatch- ing	Sold for the table	Total		
20	242	350	612	..	21 eggs spoiled in the months of Thir and Khurdad due to excess heat.
40	119	537	696	..	
80	208	599	887	..	
24	248	354	626	..	
30	100	196	326	..	
18	16	48	82	..	
41	..	182	223	..	
..	..	288	288	..	
253	933	2,554	3,740	..	

## STATEMENT No.

*Results of Incubation at the Poultry Farm, Himayatsagar,*

Serial No.	Month and date	Kind of Incubator	Breed of poultry	Total charge	Infer-tiles
1	1st Amerdad 1345 F. to 31st Thir 1346F.	Under hen	White Leghorn	..	..
2	Do ..	do	Rhode Island Reds (U.P.)	..	..
3	Do ..	do	Australorps	..	..
4	Do ..	do	Asseels	..	..
5	Do ..	do	Local Barred	9	..
6	Do ..	do	Black Minorca	..	..
7	Do ..	do	Light Sussex	..	..
8	Do ..	do	Rhode Island Reds (Sl.)	..	..
			Grand Total ..	9	..

V.

*during the year 1345—1346 Fasli.*

Dead in shell	Chickens hatched	PERCENTAGES			
		Infertiles over total	Dead in shell over fertiles	Hatch over total	Hatch over fertiles
..	..	..	..	..	..
..	..	..	..	..	..
..	..	..	..	..	..
..	..	..	..	..	..
..	9	..	..	100	100
..	..	..	..	..	..
..	..	..	..	..	..
..	..	..	..	..	..
..	9	..	..	..	100

## STATEMENT No.

*Results of Incubation at the Poultry Farm, Himayatsagar,*

Serial No.	Month & date	Kind of incubator	Breed of poultry	Total charge	Infer-tiles
1	1st Amerdad 1345 to 31st Thir 1346 F.	Hereson's 60 capacity Incubator.	White Leg-horn	20	8
2	Do ..	do	Rhode Island Red (U. P.)	46	18
3	Do ..	do	Australorps	40	15
4	Do ..	do	Asseels	18	5
5	Do ..	do	Local Barred	32	8
6	Do ..	do	Black Minorca	24	12
7	Do ..	do	Light Sussex	30	11
8	Do ..	do	Rhode Island (Red Sl.).	34	14
			Grand Total ..	244	91

## V. (a)

during the year 1345—1346 Fasli.

Dead in shell	Chicks hatched	PERCENTAGE			
		Infertiles over total	Dead in shell over fertiles	Hatch over total	Hatch over fertiles
5	7	40	41.6	35	58.3
10	18	39.13	35.7	39.13	64.2
8	17	37.5	32	42.5	68
7	6	27.7	37.8	33.3	46.1
8	16	25	33.3	50	66.6
6	6	50	50	25	50
8	11	36.6	42.1	36.6	57.8
8	12	41.1	40	35.3	60.0
60	93	..	..	..	58.875



## STATEMENT No.

*Average Yield of Eggs of different breeds at the Poultry Farm, Himayatsagar,*

Breed and strain	Average number of birds laying per month	YIELD PER				
		Amerdad	Shahre- war	Mehir	Aban	Azur
White Leghorn (U. P) ..	4.25	27	41	33	26	28
Australorps (U. P) ..	4.5	30	33	38	17	24
Rhode Island Reds (U. P) ..	4.2	9	13	11	17	1
Rhode Island Reds (Sl.) ..	4.6	8	26	37	25	15
Light Sussex (Pattancheru) ..	4	24	35	1	15	20
Black Minorca (Pattancheru) ..	4.2	24	50	52	28	27
Local Barred .. ..	4.3	22	19	24	9	25
Aseel (Nuri) .. ..	3	..	1	5	8	2
Grand Total ..	33.05	144	218	201	145	137

## VI.

during the year 1345—1346 Fasli.

MONTH							No. of eggs laid during the year	Average yield per bird per annum
Dai	Bahman	Isfandar	Farwar- di	Ardibe- hisht	Khur- dad	Thir		
36	32	26	60	58	31	2	390	91.76
31	21	27	45	22	23	5	316	70.2
24	39	16	45	48	23	..	246	56.9
2	12	19	29	39	30	1	243	52.8
39	..	8	21	3	8	..	174	43.5
29	55	21	59	44	22	..	411	97.8
39	23	16	19	11	15	1	223	51.8
17	24	4	16	..	4	1	82	27.3
217	206	137	294	220	156	10	2,085	61.50

*Annual Report of the Horticultural Section, H.E.H. the  
Nizam's Agricultural Department, for the  
year 1345-46 Fasli.*

*Administration.*—I continued to be in charge of the Horticultural Section throughout the year under report, as Horticulturist to Government. The period spent on tour by me during the year amounted to 114 days. This includes my tour to attend the Agricultural and Industrial Exhibition held at Lucknow in the beginning of the year 1937.

The section has four Horticultural Assistants. One of them is responsible for the working of the Experimental Garden attached to the Main Experimental Farm, Himayatsagar. The other three assistants are responsible for advisory and demonstration work in Aurangabad, Bidar and Warangal districts. The other gardens of the section, all of which are attached to departmental farms, are in charge of the Superintendents of those farms.

*Work.*—The department has five gardens at the following places, the work at which is carried out under my directions:—

1. Main Experimental Farm, Himayatsagar, Hyderabad.
2. Experimental Farm, Sangareddi, district Medak.
3. Main Experimental Farm, Warangal.
4. Main Experimental Farm, Parbhani.
5. Main Experimental Farm, Raichur.

The work carried out at each of these gardens is explained in the following chapters.

*Annual Report of the Himayatsagar Garden, for the year 1345-46 Fasli.*

*Charge.*—Mr. Shanker Pillai, Horticultural Assistant, continued to be in charge of the garden till 16th Aban 1345 F. since when Mr. Mohib Ullah, Horticultural Assistant, is in charge of it.

2. *Improvements.*—Owing to the increased demand for water of the new as well as old plantations, arrangements were made to supplement the Power pumping plant with a Persian Wheel. Plots Nos. 40 to 45 were continued to be levelled and stone terraces were made to prevent soil erosion. Avenue trees were planted in the rainy season on the eastern side of the garden to serve as wind breaks. The following kinds of trees, most of which were raised in the nursery of the garden, have been planted:—

- |                        |                        |
|------------------------|------------------------|
| 1. Inga dulcis.        | 2. Terminalia catapha. |
| 3. Persian lilac.      | 4. Bamboo.             |
| 5. Pethoclobium saman. | 6. Poinciana regia.    |
| 7. Cassias.            | 8. Wrightias.          |
| 9. Eucalyptus.         | 10. Baunhinias.        |
| 11. Pongamie glabra.   | 12. Mulberry.          |
| 13. Erythrina Indica.  | 14. Spathodia.         |
| 15. Acalyphas.         | 16. Parkensonia.       |
| 17. Dodonia.           | 18. Anona reticulata.  |
| 19. Phillantus.        | 20. Lawsonia alba.     |

3. *Fruit Crops.*—(i) *Mango.*—The mangoes are thriving fairly well. The old plantation is now in its 6th year. The individual record of its fruiting is given in the table given below:—

PLOT No. 39		PLOT No. 40 40A 40B			PLOT No. 41 41A 41B			PLOT No. 42 A		PLOT No. 43 B	
Plant No.	No. of fruits per tree	Plant No.	No. of fruit	No. of fruits per tree	Plant No.	No. of fruit	No. of fruit	Plant No.	No of fruits per tree	Plant No.	No. of fruit per tree
1	10	1	92	6	1	29	79	1	50	1	11
2	44	2	14	16	2	15	1	2	5	3	161
3	122	3	112	..	3	2	29	..	..	4	17
4	34	5	133	14	4	1	99	..	..	5	487
5	144	6	30	72	5	..	243	..	..	6	15
6	10	7	94	115	6	123	6	..	..	7	63
7	276	..	..	..	7	170	391	..	..	..	..
8	48	..	..	..	..	..	..	..	..	..	..
9	40	..	..	..	..	..	..	..	..	..	..
10	20	..	..	..	..	..	..	..	..	..	..
11	151	..	..	..	..	..	..	..	..	..	..
12	6	..	..	..	..	..	..	..	..	..	..
13	10	..	..	..	..	..	..	..	..	..	..
14	113	..	..	..	..	..	..	..	..	..	..
Total	1,046	..	475	223	..	340	848	..	55	..	753

*Grand Total 3,740.*

The naming of varieties in mangoes has long been a disputed question. It has been more so due to the fanciers, who have added their own names as a suffix or prefix, and the same variety in two gardens may be differently named. Some of the varieties are not named so instead of giving them names, they are numbered

here. The varieties imported from United Provinces of Agra and Oudh are two years old and are doing fairly well. The names of the varieties which are planted are given below:—

1. Khasa, 2. Shamsul Samar, 3. Brand of Russia, 4. Ibrahimpore, 5. Dasahri, 6. Safaida, 7. Langda, 8. Samare Behisht.

Some of the plants of local varieties were attacked by mango stem-borers. In all such plants the burrows were traced and filled with cement after treatment.

(ii). *Anacardium Occidentale*—Cashew Nut.—(Kaju). We have got 4 bearing trees in plot No. 42A. and they bore plentifully this year. The seeds were collected for raising a nursery stock of this plant. The fruits when ripe are very attractive in colour. Some of them are scarlet red and some attain golden yellow colour. The skin is very glassy and shining. *The flavour and the taste of the fruit is not very desirable. The chances of its becoming a table fruit are remote.* It is only the seed which commands a good price in the market as it is very greatly exported to Europe and America. The trees are very hardy by nature and are growing very satisfactorily without any extra care. *This crop can become sufficiently paying if the waste lands be planted with it.*

(iii) *Chickoo or Sapodilla (Achras Sapota)*.—All the trees in the plantation are 21 in number, and are growing luxuriently, two are still small to bear fruits. The chart showing the fruit record of individual plant is given below:—

Plant No.	No. of fruits per Plant	Plant No.	No. of fruits per plant
1	155	6	26
2	130	7	80
3	169	8	97
4	65	9	98
5	58	10	41
11	99	17	120
12	18	18	28
13	38	19	7
14	23	20	6
15	30	21	6
16	21		

There has not been any serious trouble due to any pest or disease. A stray attack of stem-borer in two or three plants was noted and immediately attended to. This tree is thriving very well in the chalka soils. There is a great possibility for Chickoo growers in chalka areas. The only necessary care is to keep the plantation free of weeds and the soil continuously hoed.

(iv). *Grapes*.—There are 9 varieties of grapes under trial, viz:—

- |                         |                          |              |
|-------------------------|--------------------------|--------------|
| 1. Bhokri,              | 2. Fakhri,               | 3. Malta,    |
| 4. Khandhari,           | 5. Sahebi,               | 6. Habshi,   |
| 7. Bangalore-<br>white, | 8. Bangalore-<br>purple. | 9. Seedless. |

The plantation in general is thriving well. It was pruned on 23rd Azur 1346 F. (28th October 1936) for the crop and manured. This year due to unusual rains at the time of summer pruning in the month of April, the vines were not pruned, but given the usual dose of manure. The reason for not pruning being that the plants could not be induced to rest.

Of the varieties under trial the Bhokri or the *Abi* variety which is extensively grown in some places in the Bombay Presidency, shows evidence of bearing satisfactorily here also. The analysis recorded about this variety shows that it has higher percentage of acidity, though it has higher percentage of sugar than all other sweet table varieties, but the higher percentage of acidity overcomes the sugar and makes the fruit acid. The other varieties namely Fakhri, Sahebi and Malta which are table varieties are shy bearers. They also bore some fruits last season but before they could ripe due to heavy storm on 14th Ardibehisht 1346 F. (18th March 1937) the fruits were scattered and the crop was lost before maturing.

The seedless varieties from Quetta, are not showing satisfactory progress.

The bugs appeared and were controlled by Banana Sheath Tassels. Of the diseases downy and powdery mildews also appeared but were treated by sulphur dusting and Bordeaux mixture. The pest and diseases mentioned above did not prove to be very serious. A little damage was done by Girdler to two or three stems and they were plastered with cement.

Though the grape vines are there for the last few years, yet it is not possible to say or form any decided opinion as regards their fruiting capabilities.

(v). *Pine-apple*.—The first plantation in plot No. 40A was started in the month of August 1935. 384 suckers of Queen variety and 48 of the Spineless Kew were put. The second plantation in plot No. 41A was made in the month of March 1936.

The pine-apples grow very well in the chalka soils. Their only need besides ordinary cultural treatments is shade and this was provided late in the month of Aban 1345 F. (September 1936). The castor plants of spreading nature proved satisfactory as regards shade. But extra care was to be taken to remove the fruiting spikes before they matured, otherwise the seeds got struck and injured the growing points. A detailed chart regarding the yield is given below:—

Row No. 1			Row No. 2			Row No. 3			Row No. 4			Row No. 5		
Plant No.	Weight		Plant No.	Weight		Plant No.	Weight		Plant No.	Weight		Plant No.	Weight	
	lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.
3	1	8	3	..	4	1	..	6	1	1	2	1	2	.
8	1	2	4	..	4	6	..	14	2	1	12	8	1	8
12	1	8	10	..	4	8	..	14	4	1	..	10	..	14
15	1	2	12	1	8	10	..	10	6	..	8	11	1	..
24	..	6	17	..	8	12	..	8	10	..	14	17	1	..
30	1	8	20	1	2	13	1	..	13	..	12	20	1	..
32	1	4	21	1	..	14	1	..	14	..	14	21	1	8
38	1	..	30	..	12	15	1	4	15	1	6	22	..	12
34	2	..	31	..	12	16	..	8	16	..	4	23	1	8
35	1	6	32	1	..	17	..	14	17	1	2	26	1	..
36	..	12	33	1	..	19	..	14	19	1	..	32	1	6
38	..	8	34	..	8	22	1	8	20	1	8	35	..	12
39	1	2	37	1	6	25	..	4	22	1	..	40	..	6
40	1	8	41	..	8	28	1	4	25	..	8	41	..	8
43	1	..	42	..	8	30	1	8	27	2	..	43	..	6
44	..	8	43	..	14	31	1	8	29	1	..	48	1	10
45	1	2	44	..	8	35	..	8	30	1	..	..	..	..
49	1	..	46	1	4	37	1	..	31	1	..	..	..	..
..	..	..	47	..	10	38	..	8	32	1	..	..	..	..
..	..	..	48	1	8	41	1	..	33	..	8	..	..	..
..	..	..	..	..	..	44	1	..	36	..	6	..	..	..
..	..	..	..	..	..	45	..	10	38	..	8	..	..	..
									44		12			



[illegible]

[illegible][illegible]

## Plot No. 41 A.

Row No. 1			Row No. 3			Row No. 5			Row No. 8			Row No. 9		
Plant No.	Weight		Plant No.	Weight		Plant No.	Weight		Plant No.	Weight		Plant No.	Weight	
	lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.
6	..	4	4	..	8	6	..	4	14	..	8	3	..	4
28	1	..	7	..	4	7	..	4	..	..	..	..	..	..
..	..	..	11	..	8	28	1	5	..	..	..	..	..	..
..	..	..	26	1	8	..	..	..	..	..	..	..	..	..
..	..	..	28	1	2	..	..	..	..	..	..	..	..	..

Row No. 11			Row No. 12.											
Plant No.	Weight		Plant No.	Weight		Plant No.	Weight		Plant No.	Weight		Plant No.	Weight	
	lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.		lb.	oz.
3	..	4	12	..	4	..	..	..	..	..	..	..	..	..
..	..	..	24	..	8	..	..	..	..	..	..	..	..	..
..	..	..	26	..	8	..	..	..	..	..	..	..	..	..

In last year's report the maximum weight of the fruit was recorded over 2 lbs., but this year it had hardly attained a weight of 2 lbs. This is perhaps due to the fact that the present plantation is in a poorer soil.

The second pine-apple plantation has not come to good bearing, though some stray fruits have appeared.

The papaya trees planted to provide shade and at the same time give some crop have begun to yield, but

many of the trees snipped due to storm and a good number of them turned out to be males. The gaps have been filled up and the male plants have been topped for experimental purposes. The crop so far is free of pests and diseases.

(vi) *Guavas*.—The treatment of pruning the plants and thinning of fruits has given convincingly encouraging results. The fruits obtained were uniformly large in size and very attractive. The safeda and the Habshi are really good fruits. But the varieties purchased from commercial nurseries and planted in lines are not all true to type. So it has become more of a mixed plantation of Guavas. The Chitedar variety is also fairly good. The Karela does not seem to appeal as regards its shape, colour and taste.

A large number of seedlings and grafts were prepared for sale during the year. The seedless fruit is good in taste, but it is not absolutely seedless. Comparatively it has very few seeds. The plantation has again been treated and the roots were exposed on 16th Thir 1345 Fasli (21st May 1937).

The crop so far has been free of pest and diseases. The individual plant performances record is given below:—

Plant No.	Weight of fruits per plant	Plant No.	Weight of fruits per plant	Plant No.	Weight of fruits per plant
1	38	14	39½	27	10
2	14½	15	31	28	14½
3	24	16	33½	29	32½
4	59	17	9	30	20
5	22½	18	10½	31	10½
6	40½	19	27	32	½
7	49½	20	18	33	24½
8	59½	21	15½	34	28
9	37	22	14½	35	22½
10	11½	23	26½	36	29
11	50	24	27½	37	38½
12	32	25	14½	38	21½
13	29½	26	36½	39	12½

(vii) *Figs.*—The fig plantation was in a very bad state of health, due to the attack of stem-borers and alkalinity of the soil. As the plants are not growing vigorously they fall victim to many diseases and pests. During the year under report, the fig plants had an attack of mites, scale insects, aphids and rust, besides the usual serious trouble of stem-borers. The Entomological Assistant on referring, has kindly treated the plants with sulphur and other insecticides. In spite of the treatment for Bahar the yield has been very unsatisfactory. A detailed statement showing individual plant record is recorded below:—

Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant
3	4	20	4	32	3
4	10	21	5	33	9
5	11	23	28	34	15
6	4	24	3	36	2
8	6	25	25	37	1
9	4	26	2	43	15
13	23	27	32	44	6
14	43	28	33	46	11
15	18	29	14	47	1
17	5	30	6	50	2
18	2	31	31	51	1
..	..	..	..	54	3

Due to the attack of the borer there have been several gaps which were filled up. The single stem trees were allowed to branch at the base and the trees are gradually trained to bushes to eliminate the risk of gaps. The Black Ischia variety has proved to be very hardy and resistant of diseases and pest, but the fruits shed down

prematurely or if at all they get ripe, they taste absolutely insipid. For this reason these plants were budded with Aurangabad and Maisaram buds. The branches that have sprouted from these buds are very healthy and have developed good fruits.

(viii) *Citrus*.—The plantation is in the 6th year. It did not respond to the treatment for Bahar very well this year due to untimely rains, yet the crop obtained was fairly good. A detailed statement showing individual plant record is given here:—

Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant
22	2	41	292	55	25
28	4	42	223	56	18
24	1	43	79	57	110
28	1	44	45	58	32
30	1	45	78	59	189
33	11	46	73	60	130
34	36	47	146	61	29
35	48	48	173	62	18
36	86	49	89	63	29
37	37	50	22	64	38
38	14	52	13	65	59
39	43	53	115	66	7
40	1	54	215	..	..

Some of the mosambi fruits develop a hard woody centre quite unlike others, which was observed only in big fruits. It may be due to a character of the mother plant from which the bud was obtained.

The mosambi fruits were also slightly attacked by mites, but the attack was negligible. A sulphur dusting was given.

The *grape fruits* growing in our garden, are having a good demand and ready sale. People who happened to purchase it once have been regular purchasers. This fruit is mostly appreciated by highly cultured people who have either tasted it abroad or know its vitamin efficiency. Many of the people mistake it for 'Pomelo' and do not realise its nourishing value. There is every hope of increasing demand of this fruit with proper publicity both as regards its real qualities and advantages of consuming it. Individual record of plant is given here:—

Plant No.	No. of fruits per tree	Plant No.	No of fruits per tree
61	29	62	18
63	29	64	38
65	59	66	7

This is the record till the end of the year, there is still a large number to be harvested.

(ix) *Papaya*.—The papaya can very successfully grow in all chalka soils and is very hardy plant both as regard its growth and resistance to diseases and pest. The papaya scab though appears occasionally, but it is of minor importance. There is no special plantation, but there are sufficient number of plants all over the area on the road sides. The fruits borne are much superior to the local varieties and are devoid of that deterring smell which is not liked by many people. The varieties compared to the previous record do not seem to yield the same size, which may be due to deterioration of seed in local climate.

On 24th Aban 1345 F. (29th September 1936), there was a heavy storm due to which many of the papaya plants swipped off. This has been taken advantage of and the male papayas thus swipped were cut off and along with many entire ones were also cut at a height of 3 feet from the ground. This was mainly with the intention of experimentation of change of sex. But it did not give any satisfactory result, all the plants again bore male spikes.

The papaya plants that lodged due to strong winds were again lifted and planted. Though the plant remained alive for a very long time but resulted in no fruit. Ultimately the plants succumbed in summer.

Papaya suffered the most in the storm of 14th Ardi-behisht 1346 F. (18th March 1937), many unripe fruits of big size dropped down and good number of fruits laden trees swipped. The total number of fruits lost was 222 weighing 491 lbs.

(x) *Banana*.—The banana plantation in plot No. 30 having mostly an heavy alkaline soil has not been a very great success. It was only the western portion of the plot where the soil is slightly better, the Basrai variety responded well. The rest of the plants further down as we go towards east show no sign of growth. The banana in the extreme eastern portion of the plot proved a total failure. The statement showing the record of the plants that have fruited during the year is given here:—

BASRAI		MADORA BANGA- LORE		PLANTAIN DRAINAGE FARM		PLANTAIN RED		PLANTAIN SONARI		PLANTAIN RAJARU	
Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant.	Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant	Plant No.	No. of fruits per plant	Plant No.	No of fruits per plant
3	40	3	224	4	30	3	31	2	145	3	123
4	53	4	100	5	36	5	42	3	72	4	32
5	20	6	100	7	46	6	36	4	37	5	66
8	74	7	36	16	75	8	19	5	32	7	40
9	49	..	..	18	28	13	28	6	90	8	62



BASRAI		PLANTAIN SOKANDA BALAI		PLANTAIN ELCHI		PLANTAIN RED		PLANTAIN SONARI		PLAN- TAIN SONI	
P.	Fr.	P.	Fr.	Pl.	Fr.	Pl.	Fr.	Pl.	Fr.	Pl.	Fr.
1	..	..	..	..	..	..	..	..	..	..	..
10	40	4	30	2	60	14	26	7	47	3	40
12	60	6	45	3	110	15	42	8	62	5	66
13	60	7	39	5	66	16	29	..	..	6	55
14	36	9	24	6	20	17	36	..	..	7	35
24	50	18	30	7	84	18	33	..	..	8	72
25	54	16	19	8	66	19	29	..	..	9	88
26	71	17	80	9	28	23	30	..	..	..	..
27	96	18	55	..	..	24	33	..	..	..	..
28	25	..	..	..	..	25	43	..	..	..	..
29	40	..	..	..	..	26	43	..	..	..	..
34	36	..	..	..	..	27	39	..	..	..	..
35	72	..	..	..	..	28	42	..	..	..	..
36	40	..	..	..	..	30	40	..	..	..	..
38	80	..	..	..	..	34	50	..	..	..	..
40	33	..	..	..	..	38	25	..	..	..	..
43	42	..	..	..	..	..	..	..	..	..	..
45	60	..	..	..	..	..	..	..	..	..	..
46	65	..	..	..	..	..	..	..	..	..	..
49	50	..	..	..	..	..	..	..	..	..	..
50	61	..	..	..	..	..	..	..	..	..	..
53	32	..	..	..	..	..	..	..	..	..	..
55	47	..	..	..	..	..	..	..	..	..	..
56	50	..	..	..	..	..	..	..	..	..	..
57	45	..	..	..	..	..	..	..	..	..	..
58	66	..	..	..	..	..	..	..	..	..	..
61	90	..	..	..	..	..	..	..	..	..	..
62	48	..	..	..	..	..	..	..	..	..	..
63	99	..	..	..	..	..	..	..	..	..	..
64	48	..	..	..	..	..	..	..	..	..	..
65	36	..	..	..	..	..	..	..	..	..	..
67	60	..	..	..	..	..	..	..	..	..	..
68	39	..	..	..	..	..	..	..	..	..	..
70	36	..	..	..	..	..	..	..	..	..	..
73	60	..	..	..	..	..	..	..	..	..	..
74	75	..	..	..	..	..	..	..	..	..	..
76	91	..	..	..	..	..	..	..	..	..	..
80	66	..	..	..	..	..	..	..	..	..	..

Due to the storm all the tall varieties snipped off in the middle in spite of wind-break. The Basrai plants remained entire and they were the first to receive the wind as the wind blew from the west. Basrai variety

proved best both as regards yield and superior to all in standing storm due to its dwarf nature.

(xi) *Dates*.—The general condition of the plantation is encouraging. Most of the plants have number of suckers around them, most of which are now fit to be separated.

The Rhinoceros Beetles generally attack the growing shoot and it is kept under control by careful inspection and removal of their grubs every day.

(xii) *Cocoanut*.—The cocoanut plantation in plot No. 29 with a soil similar to that in the eastern half of the banana plant which is heavily alkaline are doing unexpectedly well. The few gaps that had occurred in summer were duly filled up and the condition of the plantation is highly promising. If this proves successful as regards its bearing most of the alkaline soil of the State can successfully be utilized for such an economic crop as this.

(xiii) *Pan-malla*.—The old pan-malla in plot No. 34 D was during the year, free of all pest and diseases but was deteriorating due to age. This has therefore been finished and taken up for nursery work.

The new pan-malla in plot No. 32 D. was started last year for varietal tests. These are the following varieties planted therein: 1. Dasavari, 2. Khatri, 3. Ambadi, 4. Dhokla, 5. Bongu, 6. Kapuri.

The betel-vines have established. The Dasavari variety is more in demand compared to all other varieties under trial. The betel-vines do not bear profusely until they are brought down and coiled. Whatever little produce is harvested is sold out locally. The total yield for the year under report was 7,228 leaves.

*New Fruit Plantation*.—The better plots available at the Station are all utilized for important fruit crops. The lower area which was hitherto used for vegetable cultivation is now planted with different varieties of hardy fruit trees. The following are the kinds and varieties of fruit trees and the details of their plot Number:

(i) *Ber.*—(*Zizyphus Jujuba*) Plot No. 32A.

*Varieties.*—(a) Benares, (b) Lucknow, (c) Bombay, (d) Narikeli long, (e) Narikeli round, (f) Patna.

As the soil of these plots is highly alkaline even these hardy plants have not survived one and all. As consequence there are several gaps to be filled in. The gaps will be filled by the buds removed from the existing plants.

(ii) *Sour Limes.*—(*Citrus Medica-varacida*) (plot No. 32 B.).

In this plot the following varieties of sour lime were planted:—(a) Seedlings from Hyderabad, (b) Grafted from Bangalore, (c) Budded from Poona, (d) Pati from Calcutta.

Nearly all the varieties have succumbed leaving an entire gap. This plot will be replanted with still more hardier varieties of citrus.

iii.—*Lemon.*—(Plot 32 C). In this plot the following varieties of lemons were put in:—(a) Citron, (b) Eurika, (c) American Wonder, (d) Kiaora, (e) Genoa, (f) Villa Franca.

Of the above varieties only citron has proved to be the most successful. They are at the extreme end of the plot and have a drain by the side and as such they have got the advantage of the situation. The rest of the varieties have nearly succumbed leaving a plant or two here and there. The gaps will be filled here.

*Different kinds of Anonas.*—(Plot No. 34 A.).—(a) *Anona Squamosa*, (b) *Anona Muricata*, (c) *Cherimolia*, Some of the plants succumbed which were subsequently replaced. The general condition of the plants, *Anona* as a whole is not satisfactory.

*Pomegranate Varieties.*—(*Panica Granatum*).—(Plot No. 34 B.). These are the varieties of Pomegranate planted here:—(a) Delhi Black, (b) Bangalore, (c) Local, (d) Persian White, (e) Dholka, (f) Kabuli.

Pomegranate plants are capable of tolerating alkalinity of the soil, and as such they are thriving here comparatively much better than other crops.

*Orange Varieties.*—(Plot No. 34 C).—These are the varieties of the oranges that were put in this plot.—(a)

Coorg, (b) Batavian, (c) Grafted Bangalore, (d) Orange budded on Sweet lime, (e) Orange budded on Jamburi.

Citrus is most fastidious as regards its soil selection. From this lower area better plots were selected for varietal test of this crop.

There are several gaps in this plot, another effort, looking to the soil conditions, will be made by replanting it with hardier varieties.

*Vegetables.*—The cultivation of vegetables was hitherto restricted to the lower area. This year for the first time the site for vegetable cultivation was changed to a better situation. The new area which was selected for the cultivation of vegetables has been prepared after levelling and terracing of the sloping plots of the mango plantation.

As the plots are newly levelled, experiments were not started with vegetables. The produce of the different vegetables planted was also not uniform owing to the reason explained above. The soil is of very light nature and it is being supplemented with the addition of tank silt, to increase its retention capacity for water and also to improve the fertility.

In plots Nos. 40 and 41, which were being used for garden crops, had the benefit of the residual effect of the manure applied in previous years. Some varieties of peas were sown in these plots, of which the Marrow Fat proved to be the best.

*Visitors.*—The garden is now being frequently visited by the people interested in horticulture. Mention may be made of the names of Sahebzada Nawab Basalat Jah Bahadur, the Honourable the Resident, Sir John and Lady Russell and Mr. Sayed Mohammad Mehdi, Secretary of the Executive Council.

*Annual Report of the Sangareddy Garden, for the  
year 1345-46 Fasli.*

*Charge.*—The Superintendent of the Sangareddi Experimental Farm continued to be in charge of the garden.

*Irrigation.*—The total area of the garden is 23 acres. There are 3 wells in the garden from which iron pipes have been laid down to the plots. Two of these wells became completely dry in the hot season, and the water level in the third went down to about 60 feet. At present, about 10 acres are irrigated. It is difficult to extend the area, on account of scarcity of water.

*Fruit crops.*—The plantation consists of the following kinds of fruit trees:—

---

<i>Kind of fruit.</i>	<i>Area in acres.</i>
<hr/>	
1. Mango .. ..	4.00
2. Citrus .. ..	2.00
3. Guavas .. ..	1.50
4. Sapodilla .. ..	1.25
5. Pomegranate .. ..	0.50
6. Fig .. ..	0.25
7. Date .. ..	1.75

---

Beside the above pine-apple, custard-apple, bullock's heart, cocoanut and papaya are planted on smaller areas.

*Mango.*—(*Mangifera Indica*).—During the year under report, new extension has been made to the plantation. At present, there are 125 plants of the following

18 varieties, which are growing satisfactorily:—

- |                    |                     |
|--------------------|---------------------|
| 1. Malgoba,        | 2. Fajri,           |
| 3. Goe-bunder,     | 4. Dilpasand,       |
| 5. Sufaida,        | 6. Durre-behisht,   |
| 7. Alphonso,       | 8. Puttu,           |
| 9. Sunder Shah,    | 10. Maharaj Pasand, |
| 11. Dasherri,      | 12. Samare Behisht, |
| 13. Amni,          | 14. Qalaqand,       |
| 15. Black Malgoba, | 16. Langda,         |
| 17. Shamsul Usmar, | 18. Totapari.       |

This year also a small number of fruits were taken from Malgoba, Goe-bunder and Totapari.

*Citrus*.—The plantation was treated as usual. The necessary cultural operations of ploughing, mulching, harrowing were given. The plantation was green manured. Irrigations were given as necessary. The trees were treated for Bahar. Fruits to the value of Rs. 690-13-11 were harvested and sold.

*Guavas*.—(*Psidium Guava*). The area under guava is 1.50 acres. There are following varieties of guavas growing here:—

- |               |              |
|---------------|--------------|
| 1. Allahabad, | 2. Kohir,    |
| 3. Bangalore, | 4. Seedless. |

The plantation was treated as usual. The necessary cultural operations of ploughing, mulching, harrowing were given. The plantation was green manured. Irrigations were given when deemed necessary. The plants which are still young were not treated for Bahar, the flowers which appeared were removed. Fruits to the value of Rs. 10-7-7, were sold, being the produce from a part of the plantation.

*Chickoo*.—(*Achras Sapota*).—The area under chickoo is 1.25 acres. The chickoo plants are thriving well in the deep chalka soil of this garden. The plantation is now entirely free of gaps. Green manuring was done by sowing sunhemp. No fruit was allowed as the plants are still young.

*Pomegranate*.—(*Punica Granatum*).—The area under this crop is 0.5 acres. The plantation was manured with farm-yard manure. Ploughing, hoeing and mulching was done. Irrigations were given whenever necessary. The fruit was not attacked by Anar-caterpillar. The unaffected fruits thus harvested were sold in the local market, at a reasonable price.

*Figs*.—(*Ficus Carica*).—0.25 acres. There is nothing very particular to be mentioned about this crop. This was given the necessary cultivation and irrigations. The plantation was manured on 8th Isfandar 1346 F. (10th January 1937). The plants notched gave satisfactory results as regards bearing.

*Dates*.—(*Phoenix Dactylifera*).—1.75 acres. Out of the 31 varieties only a few survived. The surviving ones are making a good growth. The Rhinoceros beetle attacked some of the plants, which were constantly watched and picked. The question of filling up of gaps can only be solved when suckers will be removed from Himayatsagar date plantation. During hot summer months when water is a bit scarce the plants are hand-watered.

The minor plantations which consist of pine-apple, custard-apple, bullock's heart and cocoanut cover an area of 1.50 acres. The seed of sunhemp was sown for green manuring on 12-9-1345 F. (17-6-1936), which was buried on flowering in the month of Shehrewar 1345 F. (July 1936). These crops were also required to be hand-watered during summer. The pine-apple required shade which was provided by planting papaya trees, with a view that it will not only give the desired shade but will prove doubly beneficial by giving some monetary benefit from the sale of the fruits produced. It is perhaps due to its gross-feeding that the pine-apple plants have not made any good growth and the fruits remained under-size. The applications of the manure to the pine-apples proved of advantage to the papayas. The papaya crop produced, fetched as much as Rs. 71-8-4.

*Miscellaneous Fruit Plants*.—This plot consists of the following plants:—

1. Peaches	..	..	..	14
2. Apples	..	..	..	3

3.	Bilamboo (Averroha Belimbi)	..	2
4.	Quince	.. ..	1
5.	Awla (Philanthus Emblica)	..	1
6.	Star-Goosberry (Philanthus Disti- cus)	.. ..	6
7.	Coffee	.. ..	7
8.	Rose-apple	.. ..	2
9.	Kamrak	.. ..	1
10.	Cherry	.. ..	1

Out of these the following have fruited this year:—  
(a) Belamboo, (b) Kamrak, (c) Star-goosberry, (d) Coffee, (e) Peaches (though fruited but the fruits dropped down).

*Vegetables.*—The following vegetables were cultivated in plot No. 18 which is about an acre:—

- |                      |                    |
|----------------------|--------------------|
| 1. Leafy vegetables, | 2. Tomatoes,       |
| 3. Beet roots,       | 4. Peas,           |
| 5. Double Beans,     | 6. French Peas,    |
| 7. Capsicums,        | 8. Brinjals,       |
| 9. Ridged Gourds,    | 10. Bottle Gourds, |
| 11. Bitter „         | 12. Snake „        |

A greater area could not be put under vegetables as the water scarcity does not permit it.

*Ornamental Area.*—The ornamental work at Sangareddi may be divided into two kinds:—

1. The cultivated flowers and ornamental plants round the lawns.
2. The Zerophytic garden.

Both the gardens were duly attended to and are in excellent condition.



*Annual Report of the Warangal Garden, for the  
year 1345-46 Fashi.*

*Charge.*—Mr. M. Ramachandra Naidu, Horticultural Assistant, remained in charge of the garden till 13th Shahrewar 1345, since when the Superintendent of the Main Experimental Farm is in charge of it.

*Improvements.*—Plots Nos. III-A, IV-A and V-A, which were ill-drained have been improved by deepening the side drains. The levelling work of the plots Nos. VI-B and VII-B was continued and terraces were made in the southern portion of them. Plots Nos. 8 and 9, which were very undulating, have been levelled and terraced.

*Crops.*—Varieties of the following kinds of fruits are planted in this garden:—

<i>Kind of fruit.</i>			<i>Plot No.</i>
1.	Pomegranate	.. ..	I-A.
2.	Fig	.. ..	I-B.
3.	Citrus	.. ..	III-A. & B.
4.	Custard-apple	.. ..	IV-A.
5.	Grape	.. ..	IV-B.
6.	Date	.. ..	V-A.
7.	Guava	.. ..	V-B.
8.	Sapodilla	.. ..	VI-A.
9.	Mango	.. .	VI-B. & VII-A. & B.
10.	Miscellaneous	.. ..	XI-A.
11.	Pine-apple	.. ..	XII-A. & B.
12.	Papaya	.. ..	XIV-B.
13.	Phalsa	.. ..	XIV-C.

*Pomegranate.*—The plot which has been selected for this crop, is slightly ill-drained with alkaline patches. As generally the pomegranate crop is not much affected by the alkalinity of the soil, this piece of land was therefore selected for the crop, which is doing fairly well. Though the flowers appear and fruit formation continued, by considering the age of the plantation, it seemed advisable to prevent fruit formation by plucking the flowers off. A couple of fruits which were tasted, even at this age of the plantation, were found to be delicious and seeds were soft, juicy and colour was attractive.

*Figs.*—Two of the varieties of figs are from His Exalted Highness the Nizam's Dominions and they are known as Doulatabadi and Maisram and the third one is from Bangalore which is called Mardaram. The plantation is in its third year. A higher percentage of the fruit which was retained on each of the plants was sold in the local market. Out of the three varieties under trial, Maisram has got good demand in the market owing to its sweetness and size. The plants are growing very luxuriantly and in spite of scarcity of water, their growth seems to be promising. There is a local variety existing in the district and it is now being replaced by the Maisram variety which has been introduced to the locality by demonstrating its superiority over the local at the Horticultural Station.

*Citrus.*—*Sour Limes.*—This is a variety which was imported from Bangalore and the plants are all grafted ones. This plot seems to be very ill-drained and even in summer, water can be found if dug a few inches only. Though the soil in pits has been replaced by a desirable mixture, no improvement in the growth of plants could be recorded so far. The same reason holds good for the increased number of gaps. The condition of the soil being incongenial for the plantation the plants were late in bearing of the fruits. In the same plot hardier varieties of citrus like (Karna) citrus decumana are planted and they withstand the soil conditions prevailing and show good developments.

The lower area of this plot which is called block 'B' is consisting of congenial soil for the citrus plantation and it has, therefore, been planted with more important kinds and varieties. Nagpur and Malta Santra-organges

are growing luxuriently. No treatment has so far been given to take crop from them. Next year they will be in a proper age to bear fruits. Mosambique, Pomelo and Tangelo orange plants are also growing in a satisfactory manner. Tangelo plantation has been taken up as a trial measure, shortly before the beginning of the year under report. This is going to be a new addition to the kind of citrus varieties existing in our State.

*Custard-apple.*—The plot in which this crop is growing is poorest of the lot. The nature of the soil is sticky and impervious, but the growth of the existing plants shows that even in this kind of soil the plantation stands well.

*Grape-vine varieties.*—Four varieties of grapes are under trial namely Bokri, Fakhri, Kala Sahebi and Malta. A suitable plot has been selected for the cultivation of these varieties and pangra plants (*Erithryna Indica*) are planted to serve as live supports. The different varieties mentioned above are subsequently planted by the side of the supporting in the winter of the year 1344 F. (1935). They are about a year old.

*Dates.*—The varieties of Dates were imported from Basrah and they were planted early in the summer of 1343 Fasli (1934). They are about two years old. The gaps at Warangal Station do not seem to be so many as at Sangareddy, though there is no comparison in the nature of the soil in these two places. Sangareddy Farm-soil is far better than the Warangal Farm. Further more, irrigation arrangements were timely at Sangareddy, whereas at Warangal water-supply was scarce. Looking to all these circumstances it can be recorded that Date plants can stand the defect of the soil, and scarcity of water as well. Restrictions of the foreign countries in exporting the Date-palms to India, have prohibited the securing of plants for filling up the gaps. It is therefore expected that the suckers of the Himayatsagar Date plants will be used to fill up the gaps as soon as they are separated from mother plant.

*Guavas.*—Out of the three varieties namely Habshi, Bedana and Allahabad Sufaida, the last two are leading ones. The condition of the crops is very good. The size of the fruit even though it has been from the first year's crop seems to be very promising. The fruits proved true

to the type of the varieties. The seedless variety, though has not improved in size but the taste is nice and the number of seeds is negligible.

*Chikkoo or Sapota*.—(Sapodilla—Achras Sapota) The chikkoo plantation is thriving here on this station also as good as on other stations. Both the varieties so called (a) All the year round (b) Large mammoth, have borne fruits, but because of their young age, regular crop has not so far been taken. Picking in the early stage is adopted here also. This will encourage the development of trees till they attain the proper age for bearing.

*Mango*.—A large number of important varieties were planted in the year 1343 F. (1934). Out of them a couple of varieties are no more existing as the plants dried up. The remaining ones are given below:—

Alphonso	Benishan	Langra	Goa-bunder
Nazirpasand	Walajapasand	Neelam	Sufaida
Mulgoa	Fazlee		

A few of the samples of the fruits which were taken and tasted, proved to be satisfactory. The scarcity of water in this plantation is also responsible for the present gaps. Efforts are being made to secure the varieties for filling up the gaps. The general condition of the plants is very promising and so far they are immune to any disease and pest.

*Pine-apple*.—There are altogether three varieties under trial namely, Kew, Spineless and Queen. The first crop was obtained within one year 6 months and subsequent crop was obtained in an year only. No marked difference is found in adopting spacing methods recommended by Mr. Mc. Issacs of Bangalore. The growth of the plants and development of fruits were almost the same in case of plants planted by 3'×3' and of those planted at a distance of 5 ft. The size and taste of individual fruit of giant Kew variety were comparatively better than those imported in the market from Southern India.

In spite of the difficient water-supply the general condition of the Warangal Horticultural Station was found to be progressive during the year under report. Better growth and flourishing condition of plants could have been expected with regular and independent water-supply only.

*Annual report of the Parbhani garden, for the year  
1345-46 Fashi.*

*Charge.*—The Horticultural Assistant of the Godavari Division remained in charge of the garden till the middle of Aban 1345 F., since when it is in the charge of the Superintendent of the Main Experimental Farm.

*Crops.*—This small garden of about 4 acres has the following kinds of fruit trees for demonstration purposes:—

- |                  |                |
|------------------|----------------|
| (1) Pomegranate. | (2) Plantain.  |
| (3) Fig.         | (4) Citrus.    |
| (5) Papaya.      | (6) Date.      |
| (7) Guava.       | (8) Sapodilla. |
| (9) Mango.       |                |

*Pomegranate.*—(*Punica granatum*)—There are 46 trees of Kabuli variety. The plantation is about 3 years old. Regular produce will be taken for record and disposal from the next year, provided the trees show satisfactory development. The trees were manured in the month of April with farm-yard manure. The condition of the crop is very promising.

*Plantain.*—(*Musa sapientum*).—The varieties under trial are as follows:—

- |             |               |
|-------------|---------------|
| (a) Red.    | (b) Soni.     |
| (c) Soneri. | (d) Rajabale. |
| (e) Madura. | (f) Green.    |
| (g) Elchi.  |               |

The soil of Marathwada in general and of the Parbhani garden in particular seems to be very suitable for the Banana cultivation. The trees were manured twice in December and February. The plantation is in flourishing condition. Out of the varieties under trial Red of

course is much appreciated by one and all but the only drawback being its shy bearing nature. The green stands second in the taste and size both.

Elchi though small in size is of a very good taste and has a papery skin. The fruits are very easy to digest.

*Produce.*—Out of the 7 varieties only 5 bore fruits. The yield was as follows:—

<i>Fruits.</i>			
1. Red	..	..	32
2. Soni	..	..	78
3. Sonari	..	..	66
4. Green	..	..	210
5. Elchi	..	..	100
6. Rajabale	..	..	..
7. Madura	..	..	..
Total ..			<hr/> 486 <hr/>

*Figs.*—(*Ficus Carica*).—The fig plantation which was shifted year before last to a suitable plot are all well established and are now made to grow on bush system. This year fruiting started in May 1937, and the outturn till the end of the year was recorded to be 11½ lbs. There are still fruits remaining to be harvested, the record of which will appear in next year's report. The general condition of the plantation is encouraging.

*Citrus.*—There are two plots of grape-fruits (plot No. 5-A and plot No. 12). Altogether there are 22 plants. They were treated for Bahar in the month of May 1937. The partial outturn obtained till the end of the year was recorded to be 138 fruits. The remaining ones which are to be harvested in due course will be taken in next year's record. The fruits harvested are from old plantation, in which there are 10 plants only. The rest of the 12 have not yet reached the bearing age. There is no demand for the grape-fruit at Parbhani. The fruits were sold at Rs. 3 a dozen.

*Santras.*—There are in all 72 trees, which were treated for Bahar in the month of May 1936. Harvesting started from the month of February 1937. Out of the

whole lot only 41 fruited. The nature of bearing in 21 plants was profuse, normal in 17 and very poor in three. The total number of fruits obtained were 8,714. The fruits of 5 trees from this lot were very small and sour which is all due to unreliable stock supplied by Commercial Nurseries.

*Naval Oranges.*—There are 7 trees of Naval Oranges and 9 of Jamboori in the Naval Orange plot. The original plot was capable of holding only 7 plants but later due to a change in the lay-out 9 more plants could be planted. The Jambooris have been put in with a view to bud them with the buds obtained from the Naval Oranges already existing.

*Limes.*—There are altogether 16 plants of Malta and Kaghzi limes. The condition of the plantation is satisfactory. They have not completely reached the age for recording the produce.

*Guava.*—The guava plantation which was shifted to plot No. 13, is now well established and has begun bearing fruits. The plants are uniform and growing luxuriantly. The total weight of fruit borne is recorded to be 60 lbs.

The plantation of mango, chickoo, date and papaya are growing fairly well. A proper comparison may be made on their bearing as to the effect of different soils both as regards their quality and quantity.

*Miscellaneous Fruit Trees.*—A demonstrative plot of miscellaneous fruit trees has got 34 trees of different kind of fruits enumerated below:—

1.	Ramphal—Bullock's Heart, ( <i>Anona Reticulata</i> )	2
2.	Custard-apple ( <i>Anona Squamosa</i> )	3
3.	Phalsa, ( <i>Grewia Asiatica</i> ) .. ..	2
4.	Chinese Guava .. ..	1
5.	Jack Fruit .. ..	1
6.	Lichi .. ..	6
7.	Loquat .. ..	4
8.	Kamrac .. ..	4

9.	Star-goosberry	..	..	..	2
10.	Ber	..	..	..	3
11.	Awla	..	..	..	2
12.	Khirni	..	..	..	4
					<hr/>
					34
					<hr/>

The trees enumerated above are all in a very good condition. They are all favourably responding to the soil which is of a heavy nature.

*Vegetables.*—In plot No. 16, Tomato, Beans, Capsicum, Pumpkin, Brinjal of superior varieties were grown in different instalments to comply with the demand of the farm colony and the surplus was disposed off in the local market. In summer and early in the rainy season indigenous vegetables were grown successfully.

It is satisfactory to note that the management of garden was given due care and attention throughout the year under report by the present Farm Superintendent and his predecessor, and the general condition of the garden, was found by me to be very encouraging.



*Annual Report of the Raichur garden, for the year  
1345-46 Fasli.*

*Charge.*—The Horticultural Assistant of the Karnatak Division remained in charge of the garden till 16th Azar 1346 F., since when the Superintendent of the Main Experimental Farm is in charge of it.

*Soil.*—The soil of the garden varies in depth and fertility, changing from light morrum to deep black soil from south-west to north-east. Only a quarter of the garden area in the north-east has deep soil, and the rest of the land has either very hard subsoil or actual rock close to the surface, much of which has been blasted out wherever its effect was observed on the crop. The total area of the garden is 6.80 acres.

*Irrigation.*—The only source of water is a large well, varying in depth from 25 to 35 feet. In spite of this large size, the recuperation in the well is very limited. In good seasons, the water is some times only 5 feet below the ground level. In the absence of good rains, the bottom rock is almost laid bare (not an uncommon feature in the district).

*Crops.*—The following kinds of fruit trees are planted in this garden:—

Plot No.	Area in cents	Crop	No. of plants
4	10	..	..
5	9	..	..
6	9	Anona sp. ..	30
7	9	Custard apple..	
8	9	do	
9	13	do	
10	13	..	..
11	13	..	..
12	13	Limes ..	24
13	13	Mosambi ..	40
14	13	Orange ..	30
15	13	Citrus ..	17
16	16	Mango ..	..
17	21	Mangoes ..	18
18	16	do ..	
19	16	do ..	
20	10	do ..	
21	10	do ..	31
22	11	Pomegranate ..	
23	11	do ..	..
24	10	Guavas ..	21
25	10	Ber ..	..
26	13	Chickoo ..	19
27	13	Figs ..	23
28	15	Figs black ..	23
29	13	Grapes ..	28
30	13	Vegetables ..	..
31	13	do ..	..
36	7	Ornamental ..	..
37	7	Gardening and Flowers	..
38	12	do ..	..
38	12	do ..	..
39	12	do ..	..
40	8	do ..	..
		Pine-apple ..	50
		Dates ..	17

Due to the scarcity of water and excessive heat of the region, the vacant plots are proposed to be utilised for plantations of drought-resisting nature. Last year to start with, custard-apple (*Anona Squamosa*) have been planted. At present the plants are in their initial growth. Some other hardy fruits will also be planted shortly. The banana and papaya plantation could not

stand long due to shortage of water. They were therefore removed. Guavas and Chickoos in spite of the unfavourable conditions are doing tolerably well. The pomegranate plants are growing well and are giving big fruits. Only two out of 22 existing grape-vines have yielded good fruits which tasted well. The condition of the Black Ischia variety of figs was found the same as in other gardens. The Maisram variety of figs is producing fruits on a very limited scale and the growth of the plants is not uniform. 15 citrus trees were successfully transplanted from the northern ends of the plots to the gaps within their respective plots thereby giving smaller but full plots instead of long plots with many gaps.

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—In order to test the keep-  
ngoes under cold storage  
of the Benishan and Mal-  
ghoba varieties were sent to the Officer in charge of the  
Cold Storage Scheme of the Imperial Council of Agricul-  
tural Research at Poona. The results are awaited.

*Acknowledgments.*—My thanks are due to all the  
Sectional and Divisional Officers of the Department for  
their co-operation in the working of my section. It is  
also very satisfactory to note that the Horticultural As-  
sistants and the Farm Superintendents concerned spared  
no pains in the execution of the work entrusted to them.  
I wish to thank them all.

(Sd.) RASUL SULTAN,  
*Horticulturalist to Government.*

ANNUAL REPORT OF THE MAIN AGRICULTURAL  
EXPERIMENTAL FARM, HIMAYATSAGAR,  
FOR THE YEAR 1345-46 F.

*Introduction.*—The lands for the Main Agricultural Experimental Farm, Himayatsagar, were acquired in the year 1336 F. (1927 A.D.) and actual experimental work was begun in 1338 F. (1929 A.D.).

*Situation.*—The Farm is situated on the Hyderabad to Himayatsagar Tank Road, at a distance of 7 miles from Charminar, 9 miles from Broad Gauge and 11 miles from Metre Gauge Railway Stations of Hyderabad. Easi stream forms the northern boundary of the Farm.

*Object.*—This Farm is the Main Experimental Farm intended for the study of the Agricultural Problems of the Telingana tract of His Exalted Highness the Nizam's Dominions.

*Area.*—Total area of the Farm at present is 302.90 acres, out of which 198 acres are under cultivation. Major portion of the remaining area, with the exception of that of under roads and buildings consists of uncultivable waste.

*Soil.*—Most of the area of the Farm is typical of Telingana tract consisting of all grades of high lying chalka soils and low lying silted areas.

*Source of Irrigation.*—The Irsalgandi Channel carrying water from the Himayatsagar Reservoir to Mir Alum Tank traverses its course through the Farm area and supplies water for irrigation.

There are also 5 wells situated inside the Farm area, out of which three wells are used for supplying water to such high lying irrigated areas which cannot be commanded by the free flow from the channel. Two wells at present are out of use in the village area. Another good well, also situated in the Farm is totally meant for the Horticultural Section.

Out of the total cultivated area of 198.0 acres the irrigable area comprises of 107 acres out of which 88.50 acres are irrigable by free flow and the remaining 18.50 acres by lift.

*Drainage.*—The main two drains, the old drain and the drain excavated in the year 1342 F. (1933 A.D.) proved very useful. During the year under report many more sub-drains were made along the road-sides which were connected to the main drain to drain off different fields.

*Season.*—A statement showing the incidence of rainfall during the year under report is appended herewith. The total rainfall throughout the year amounted to 24.0 inches, which was less by 5.63" than that of the previous year and still far below the average rainfall to the locality. The amount of rainfall record during the 4 months of the rainy season was only 11.34" which was far below the average. Though the regular monsoons started on the 1st of Amerdad but they were so light that every day's rainfall recorded was negligible. The result was that the kharif sowings were delayed till 20th Amerdad 1345 Fasli. There was not a single heavy shower of rain during the whole monsoon season. The heaviest shower amounted to 1.02" on the 22nd Mehri 1345 F.

Kharif crops and especially fodder crops suffered heavily owing to want of rain. There were no good rains even for rabi crops, and most of them had to be irrigated.

During the months of Ardibehisht and Khurdad 1346 Fasli (March and April 1937) when there were no crops, in the fields, there were good heavy showers of rains, which helped very much to plough and prepared the lands for the coming kharif season. In brief, the rainfall during the year under report was very low and the general season of the year was not favourable from the Agricultural point of view at the Main Farm.

*Experiments.*—During the year under report the experiment "Sowing of sugarcane on flat lands in chalka soil" was started and the experiment "Comparison of Ratoon Sugarcane Varieties" was given up.

Details of all the individual experiments carried out on this farm and their results are given in the following pages.

*Experiment No. 1.—Standard Manurial Experiment with Paddy.*

*Object.*—To find out the manurial requirements of paddy soil and the most profitable manure for the paddy crop.

*Plotting.*—The field is permanently laid out in 64 standard sized plots from the year 1340-1341 F. ( $44' \times 11'$ ) =  $1/90$  acre each, in four series of 16 plots each containing 12 manured and 4 un-manured control plots.

*Preparatory tillage.*—One deep ploughing was done with Victory Plough in dry field on the 13th Khurdad 1345 F. (17th April 1936). Once the soil was stirred with cultivator on the 1st Amerdad 1345 F. (6th June 1936). Three times the soil was puddled with Meston Plough on the 10th Shahrevar 1345 F. (16th July 1936); 12th Shahrevar 1345 F. (18th July 1936) and 19th Shahrevar 1345 F. (25th July 1936), and was made ready for transplanting the seedlings after levelling it with Jamboo.

*Manures.*—The following manures were applied at the rates mentioned below to their respective plots.—

A.—Un-manured control.

B.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

C.—Farm Yard Manure at 60 lbs. Nitrogen per acre.

D.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Ammonium Sulphate at 30 lbs. Nitrogen per acre.

E.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Superphosphate at 30 lbs.  $P_2 O_5$  per acre.

F.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Potassium Sulphate at 30 lbs. Potash per acre.

G.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Ammonium Sulphate at 30 lbs. Nitrogen per care.

+Superphosphate at 30 lbs.  $P_2 O_5$  per acre.

H.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Ammonium Sulphate at 30 lbs. Nitrogen per care.

+Potassium Sulphate at 30 lbs. Potash per acre.

I.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Superphosphate at 30 lbs.  $P_2O_5$  per acre.

+Potassium Sulphate at 30 lbs. Potash per acre.

J.—Farm Yard Manure at 30 lbs. Nitrogen per acre.

+Ammonium Sulphate at 30 lbs. Nitrogen per care.

+Superphosphate at 30 lbs.  $P_2O_5$  per acre

+Potassium Sulphate at 30 lbs. Potash per acre.

K.—Farm Yard Manure at 30 lbs. Nitrogen per acre

+Ammophos (20/20 grade) at 30 lbs. Nitrogen per acre.

L.—Farm Yard Manure at 30 lbs. Nitrogen per acre

+Castor Cake at 30 lbs. Nitrogen per acre.

M.—Farm Yard Manure at 30 lbs. Nitrogen per acre

+Bone meal at 30 lbs.  $P_2O_5$  per acre.

*Manuring*.—Dates of application of the various manures and fertilizers are given below:—

1. Farm Yard Manure .. 2nd June 1936 (28th Thir 1345 F.).
2. Bone-meal .. 9th June 1936 (4th Amerdad 1345 F.).
3. Castor Cake .. 15th July 1936 (9th Shahrewar 1345 F.).
4. Superphosphate .. 25th July 1936 (19th Shahrewar 1345 F.).
5. Potassium Sulphate .. 25th July 1936 (19th Shahrewar 1345 F.).
6. Ammophos .. 26th July 1936 (20th Shahrewar 1345 F.).
7. Ammonium Sulphate.—
  - 1st half .. 10th August 1936 (4th Mehir 1345 F.).
  - 2nd half .. 11th September 1936 (6th Aban 1345 F.).

*Sowing*.—Single seedlings of paddy No. 504 were transplanted at a distance of 6"×4" on the 20th Shahrewar 1345 F. (26th July 1936). Gap filling was done on the 31st Shahrewar 1345 F. (6th August 1936).

*Weeding*.—One hand weeding was done on the 23rd Mehir 1345 F. (29th August 1936).



*Pests and Diseases.*—A severe attack of *Hispa* affected the crop very much.

*Harvesting.*—All the plots were harvested on the 27th Azur 1346 F. (1st November 1936).

*Yields.*—The layout plan showing the position of plots and the actual yields of grain and straw in lb. is given below:—

## STANDARD MANURIAL EXPERIMENT WITH PADDY - ABI

Field No. 209.

	A	L	K	J	M	A	H	G	F	I	A	D	C	B	E	A
Grain	13	25	27	27	18	7	16	24	17	18	9	14	19	20	27	16
Straw	13	32	37	36	21	7	23	37	18	22	10	13	21	22	37	16
	A	K	J	M	L	A	G	F	I	H	A	C	B	E	D	A
Grain	13	22	24	17	24	9	25	17	19	13	7	22	20	19	17	15
Straw	14	26	30	17	23	9	25	22	25	12	9	23	18	20	19	16

FIELD NO. 210.

	A	J	M	L	K	A	F	I	H	G	A	B	E	D	C	A
Grain	11	24	20	26	25	10	19	23	24	23	10	16	18	14	14	12
Straw	12	27	17	34	29	9	19	29	32	25	12	14	15	13	13	13
	A	M	L	K	J	A	I	H	G	F	A	E	D	C	B	A
Grain	9	18	27	27	28	12	21	24	19	13	4	12	23	14	11	8
Straw	18	13	15	22	26	13	17	34	29	15	7	17	36	17	12	12

4 replications—size of plots  $44' \times 11' = 1/90$  acre each.

Length—North-south, Breadth—East-west

SUMMARY OF RESULTS (ABI).

	MEAN YIELDS IN POUNDS													Standard error of treatment	Critical difference	
	A	B	C	D	E	F	G	H	I	J	K	L	M			
Per acre	922.5	1,507.5	1,552.5	1,530	1,710	1,485	2,047.5	1,732.5	1,822.5	2,317.5	2,272.5	2,295.0	1,642.5	1,755	159.165	477.495
Percent-age on general mean..	- 47.4	- 14.1	- 11.5	- 12.8	- 2.6	- 15.4	+ 16.7	- 1.3	+ 8.8	+ 32.0	+ 29.5	+ 30.8	- 6.4	..	..	..
Percent-age on control	0.0	+ 63.4	+ 68.2	+ 65.8	+ 85.4	+ 60.9	+ 121.9	+ 87.8	+ 97.5	+ 151.2	+ 146.3	+ 148.8	+ 78.0	..	..	..

## Conclusion.

$J = L = K = G > C$ ;  $J > I$ ;  $L = K > H$ ;  $G > C$ ;  $I = H = E = M = C = D = B = F > A$ .

A = Un-manured Control.

B = Farm Yard Manure at 30 lbs. Nitrogen per acre.

C = Farm Yard Manure at 60 lbs. Nitrogen per acre.

D = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre.

E = Farm Yard Manure at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs. P<sub>2</sub>O<sub>5</sub> per acre.

F = Farm Yard Manure at 30 lbs. Nitrogen per acre + Potassium Sulphate at 30 lbs. Potash per acre.

G = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre + Superphosphate) 30 lbs. P<sub>2</sub>O<sub>5</sub> per acre.

H = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre + Potassium Sulphate at 30 lbs. Potash per acre.

I = Farm Yard Manure at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs. P<sub>2</sub>O<sub>5</sub> per acre + Potassium Sulphate at 30 lbs. Potash per acre.

J = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs. P<sub>2</sub>O<sub>5</sub> per acre + Potassium Sulphate at 30 lbs. Potash per acre.

K = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammophos (20/20 grade) at 30 lbs. Nitrogen per acre.

L = Farm Yard Manure at 30 lbs. Nitrogen per acre + Castor cake at 30 lbs. Nitrogen per acre.

M = Farm Yard Manure at 30 lbs. Nitrogen per acre + Bone meal at 30 lbs. P<sub>2</sub>O<sub>5</sub> per acre.

The same experiment was carried out with similar details and in the same plots in Tabi season.

*Preparatory tillage.*—Two deep ploughings with Victory plough were done in dry plots on the 25th Dai 1346 F. (29th November 1936) and 1st Bahmon 1346 F. (4th December 1936). The soil was stirred with cultivator on 27th Bahman 1346 F. (30th December 1936). Subsequently the plots were puddled three times with Meston Plough on the 18th, 11th and 16th Isfandar 1346 F. (10th, 13th and 18th January 1937). The plots were prepared for transplanting the seedlings after levelling them with Jamboo.

*Manures.*—The following manures were applied at the rates mentined below to their respective plots:—

- A.—Un-manured control.
- B.—Farm Yard Manure at 30 lbs. Nitrogen per acre.
- C.—Farm Yard Manure at 60 lbs. Nitrogen per acre.
- D.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Ammonium Sulphate at 30 lbs. Nitrogen per acre.
- E.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Superphosphate at 30 lbs.  $P_2O_5$  per acre.
- F.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Potassium Sulphate at 30 lbs. Potash per acre.
- G.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Ammonium Sulphate at 30 lbs. Nitrogen per acre  
+ Superphosphate at 30 lbs.  $P_2O_5$  per acre.
- H.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Ammonium Sulphate at 30 lbs. Nitrogen per acre  
+ Potassium Sulphate at 30 lbs. Potash per acre.
- I.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Superphosphate at 30 lbs. of  $P_2O_5$  per acre  
+ Potassium Sulphate at 30 lbs. Potash per acre.
- J.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Ammonium Sulphate at 30 lbs. Nitrogen per acre  
+ Superphosphate at 30 lbs. of  $P_2O_5$  per acre  
+ Potassium Sulphate at 30 lbs. Potash per acre.
- K.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+ Ammophos at 30 lbs. Nitrogen per acre.

L.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+Castor Cake at 30 lbs. Nitrogen per acre.

M.—Farm Yard Manure at 30 lbs. Nitrogen per acre  
+Bone-meal at 30 lbs.  $P_2O_5$  per acre.

*Manuring.*—Dates of application of the various manures and fertilizers are given below:—

1. Farm Yard Manure .. 28th December 1936 (25th Bahman 1346 F.).
2. Bone-meal .. 29th December 1936 (26th Farwardi 1346 F.).
3. Castor Cake .. 18th January 1937 (16th Isfandar 1346 F.).
4. Superphosphate .. 18th January 1937 (16th Isfandar 1346 F.).
5. Potassium Sulphate .. 18th January 1937 (16th Bahman 1346 F.).
6. Ammophos .. 19th January 1937 (17th Isfandar 1346 F.).
7. Ammonium Sulphate...
 

1st half	.. 2nd February 1937 (1st Isfandar 1346 F.).
2nd half	.. 2nd March 1937 (29th Farwardi 1346 F.).

*Sowing.*—Transplanting was done on the 17th Isfandar 1346 F. (19th January 1937) with single seedlings of paddy No. 504 in rows at a distance of 6"×4".

*Weeding.*—One hand weeding was done on the 9th Ardibehisht 1346 F. (13th March 1937).

*Pests and Diseases.*—Tabi crop had no attack of Hispa but suffered from a Mild attack of Stem borer during the year under review.

*Harvesting.*—Harvesting was done on 20th Khurdad 1346 F. (24th April 1937).

*Yields.*—The following lay-out plan shows the position of the plots as well as the actual yields in lbs. of grain and straw.

## STANDARD MANURIAL EXPERIMENT WITH PADDY—TABI

FIELD No. 209

		A	L	K	J	M	A	H	G	F	I	A	D	C	B	E	A
Grain	..	3	14	9	12	9	5	13	13	8	8	2	6	7	7	5	3
Straw	..	5	20	14	19	11	6	17	18	12	12	2	8	9	9	10	5
		A	K	J	M	L	A	G	F	I	H	A	C	B	E	D	A
Grain	..	4	8	5	5	13	6	13	6	7	4	3	5	4	5	5	3
Straw	..	4	12	8	8	13	5	19	7	5	3	1	5	4	7	4	2

FIELD No. 210

		A	J	M	L	K	A	F	I	H	G	A	B	E	D	C	A
Grain	..	3	8	3	3	5	1	4	5	2	5	1	2	3	3	3	2
Straw	..	3	6	5	6	8	1	5	7	4	9	1	3	6	4	3	3
		A	M	L	K	J	A	I	H	G	F	A	E	D	C	B	A
Grain	..	1	3	6	6	6	2	7	6	10	3	2	3	5	3	2	2
Straw	..	2	5	8	9	8	4	10	10	15	4	4	5	5	7	4	4

Four replications. Size of plot  $44' \times 11' = 1/90$  acre each.  
Length=North-south, Breadth=East-west.

SUMMARY OF RESULTS (TABLE).

—	MEAN YIELD IN POUNDS													Stand- ard error of treat- ment mean	Critical difference	
	General mean															
	A	B	C	D	E	F	G	H	I	J	K	L	M			
Per acre ..	243	333	405	423	360	468	918	558	603	693	630	810	450	531	90	270
Percentage on gen- eral mean	—	37.3	— 23.7	— 20.3	— 32.2	— 11.9	+ 72.9	+ 5.1	+ 13.5	+ 30.5	+ 18.6	+ 52.5	— 15.3	..	..	..
Percentage on con- trol	0.0	+ 37.0	+ 66.7	+ 74.0	+ 48.1	+ 92.6	+ 277.8	+ 129.6	+ 148.1	+ 183.5	+ 159.2	+ 233.3	+ 85.2	..	..	..

## Conclusion.

G > K ; L > F ; J > C ; K > B ; I = H > A ; F = M = D = C = E = B = A

A = Unmanured control.

B = Farm Yard Manure at 30 lbs. Nitrogen per acre.

C = Farm Yard Manure at 60 lbs. Nitrogen per acre.

D = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre.

E = Farm Yard Manure at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs.  $P_2O_5$  per acre.

F = Farm Yard Manure at 30 lbs. Nitrogen per acre + Potassium Sulphate at 30 lbs. Potash per acre.

G = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs.  $P_2O_5$  per acre

H = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre + Potassium Sulphate at 30 lbs. Potash

per acre.

I = Farm Yard Manure at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs. of  $P_2O_5$  per acre + Potassium Sulphate at 30 lbs. Potash per acre.

J = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre + Superphosphate at 30 lbs.  $P_2O_5$  per acre + Potassium Sulphate at 30 lbs. Potash per acre.

K = Farm Yard Manure at 30 lbs. Nitrogen per acre + Ammonium Sulphate at 30 lbs. Nitrogen per acre.

L = Farm Yard Manure at 40 lbs. Nitrogen per acre per acre + Castor cake at 30 lbs. Nitrogen per acre.

M = Farm Yard Manure at 30 lbs. Nitrogen per acre + Bone-meal at 30 lbs  $P_2O_5$  per acre.

*Experiment No. 2.—Manurial Experiment with Paddy to find out the optimum Nitrogen—Phosphoric Acid Ratio.*

The following four ratios were tried:—

1. Ratio 1:½, i.e., 30 lbs. Nitrogen+15 lbs.  $P_2O_5$  per acre.
2. Ratio 1:1, i.e., 30 lbs. Nitrogen+30 lbs.  $P_2O_5$  per acre.
3. Ratio 1:1½, i.e., 30 lbs. Nitrogen+45 lbs.  $P_2O_5$  per acre.
4. Ratio 1:2, i.e., 30 lbs. Nitrogen+60 lbs.  $P_2O_5$  per acre.

Fertilizers used for the supply of the desired quantities of Nitrogen and  $P_2O_5$  consisted of Nicifos, Diamphos and Ammonium Sulphate.

*Plotting.*—361 plots measuring 9'×8' each=1/605 of an acre each in area were prepared in 19 series on "Latin Square" method. Each series consists of 19 plots. Suitable bunds, drains and channels are prepared for each plot to separate it from the adjoining plots. Buffer plots located in between to separate the treated and control plots.

*Preparatory tillage.*—The size of the plots is so small that all the operations have to be done by hand labour. Digging of dry plots with pick-axes was done on the 20th Khurdad 1345 F. (24th April 1936). Three puddlings were done with pick-axes on the 24th, 26th and 28th Shahrewar 1345 F. (30th July, 1st and 3rd August 1936).

*Manuring.*—The buffer and control plots were not given any manure at all. The other plots were treated with the prescribed quantities of manures for each respectively. The Diamphos was applied on the 28th Shahrewar 1345 F. (3rd August 1936). Nicifos and Ammonium Sulphate were applied in two equal dressings.—

The first application was given on the 13th Mehr 1345 F. (19th August 1936) and the second on the 16th Aban 1345 F. (21st September 1936).

*Transplanting.*—Single seedlings of Himayatsagar Paddy No. 504 were transplanted 6"×4" apart on the 29th Shahrewar 1345 F. (4th August 1936).

Gap filling was done on 17th Mehir 1345 F. (23rd August 1936).

*Weeding.*—One hand weeding was done on the 24th Mehir 1345 F. (30th August 1936).

*Pests and diseases.*—The crop was badly attacked by paddy Hispa.

*Harvesting.*—The crop was harvested on the 6th Dai 1346 F. (10th November 1936).

*Yields.*—The statement showing the yields of control and manured plots is attached herewith. The yields of the buffer plots are not included in the statement as they were harvested collectively.



## MANURIAL RATIO EXPERIMENT WITH PADDY (ABI)

	E	A	E	B	E	C	E	D	E
	1 $\frac{1}{2}$	5 $\frac{1}{2}$	8 $\frac{1}{2}$	16 $\frac{1}{2}$	5 $\frac{1}{2}$	12	4 $\frac{1}{2}$	5	4
	2 $\frac{1}{2}$	6 $\frac{1}{2}$	8 $\frac{1}{2}$	20	7	14	4	6	4 $\frac{1}{2}$
E	A	E	B	E	C	E	D	E	
1	6 $\frac{1}{2}$	3 $\frac{1}{2}$	13	4	8 $\frac{1}{2}$	3 $\frac{1}{2}$	9	2 $\frac{1}{2}$	
2 $\frac{1}{2}$	9	6	15 $\frac{1}{2}$	5 $\frac{1}{2}$	12	4	9 $\frac{1}{2}$	5 $\frac{1}{2}$	
	A	E	B	E	C	E	D	E	E
	6	3 $\frac{1}{2}$	12 $\frac{1}{2}$	4 $\frac{1}{2}$	8 $\frac{1}{2}$	5	4 $\frac{1}{2}$	5	$\frac{1}{2}$
	10	6 $\frac{1}{2}$	15	6	11 $\frac{1}{2}$	5 $\frac{1}{2}$	4	5 $\frac{1}{2}$	18
A	E	B	E	C	E	D	E	E	
2	1 $\frac{1}{2}$	10	5	7	8	8	3 $\frac{1}{2}$	2 $\frac{3}{4}$	
4	1 $\frac{1}{2}$	10	6	8	7	8	4	8 $\frac{1}{2}$	
	E	B	E	C	E	D	E	E	A
	..	7 $\frac{1}{2}$	3 $\frac{1}{2}$	..	$\frac{1}{2}$	5 $\frac{1}{2}$	10 $\frac{1}{2}$	9 $\frac{1}{2}$	4 $\frac{1}{2}$
	..	8	5	..	$\frac{1}{2}$	8	9 $\frac{1}{2}$	10 $\frac{1}{2}$	28 $\frac{1}{2}$
E	B	E	C	E	D	E	E	A	
$\frac{1}{2}$	3 $\frac{1}{2}$	1	4 $\frac{3}{4}$	..	..	2	17 $\frac{1}{4}$	14	
$\frac{1}{2}$	5	2	5 $\frac{1}{2}$	..	..	2 $\frac{1}{2}$	18	14 $\frac{1}{2}$	
	B	E	C	E	D	E	E	A	E
	..	3 $\frac{1}{2}$	6	$\frac{1}{2}$	1 $\frac{1}{2}$	..	3 $\frac{1}{2}$	8 $\frac{1}{2}$	2
	..	4	8	1	2 $\frac{1}{2}$	..	4	9	9 $\frac{1}{2}$
B	E	C	E	D	E	E	A	E	
2	..	6 $\frac{1}{2}$	2 $\frac{1}{4}$	11 $\frac{1}{2}$	$\frac{1}{4}$	2 $\frac{1}{2}$	10 $\frac{1}{4}$	6 $\frac{1}{2}$	
2 $\frac{1}{2}$	..	7	4 $\frac{1}{2}$	9 $\frac{1}{2}$	1 $\frac{1}{2}$	2 $\frac{1}{2}$	9	6 $\frac{1}{2}$	
	E	C	E	D	E	E	A	E	B
	1 $\frac{1}{2}$	20	2 $\frac{1}{4}$	3	1 $\frac{3}{4}$	4 $\frac{1}{2}$	5	4 $\frac{1}{2}$	6
	3 $\frac{1}{2}$	16 $\frac{1}{2}$	2 $\frac{1}{2}$	4 $\frac{1}{2}$	2 $\frac{1}{2}$	5	4	6 $\frac{1}{2}$	19 $\frac{1}{4}$
E	C	E	D	E	E	A	E	B	
4	10 $\frac{1}{2}$	1	$\frac{1}{4}$	2 $\frac{1}{2}$	$\frac{1}{4}$	6 $\frac{1}{2}$	6 $\frac{3}{4}$	13	
7	12	2 $\frac{1}{2}$	2	3 $\frac{3}{4}$	$\frac{1}{2}$	16 $\frac{3}{4}$	9 $\frac{1}{2}$	24	
	C	E	D	E	F	A	E	B	E
	2 $\frac{1}{2}$	2	5 $\frac{1}{2}$	..	$\frac{1}{2}$	2 $\frac{1}{2}$	9 $\frac{1}{4}$	14	..
	3 $\frac{1}{2}$	2 $\frac{1}{2}$	5 $\frac{1}{2}$	..	2	5 $\frac{1}{2}$	11 $\frac{1}{4}$	14 $\frac{1}{2}$	..

						E		A		E		B		E
2		1 $\frac{1}{2}$		2 $\frac{1}{2}$		1 $\frac{1}{2}$		3 $\frac{1}{2}$		2		6 $\frac{1}{4}$		5
2 $\frac{1}{2}$		1		2 $\frac{1}{2}$		3 $\frac{1}{2}$		6 $\frac{1}{2}$		3		7		8
	E		D		E		A		E		B		E	C
	2 $\frac{1}{2}$		1 $\frac{1}{2}$		1	..	1 $\frac{1}{2}$		2		3 $\frac{1}{2}$		6 $\frac{1}{2}$	..
	2		2 $\frac{1}{2}$		2 $\frac{1}{2}$	..	4		3 $\frac{1}{2}$		8 $\frac{1}{2}$		8	..
E		D		E		E		A		E		B		C
1		1 $\frac{1}{2}$		2		1		3		2 $\frac{1}{2}$		3 $\frac{1}{2}$		5 $\frac{1}{2}$
2		1 $\frac{1}{2}$		3 $\frac{1}{2}$		4		6		3 $\frac{1}{2}$		8 $\frac{1}{2}$		7 $\frac{1}{2}$
	D		E		E		A		E		B		E	C
	6 $\frac{1}{4}$		4		1		20 $\frac{1}{2}$		14		10 $\frac{1}{2}$		3 $\frac{1}{2}$	14 $\frac{1}{2}$
	6		6		1 $\frac{1}{2}$		31		19 $\frac{1}{2}$		12		5 $\frac{1}{2}$	19 $\frac{1}{2}$
D		E		E		A		E		B		E		C
2		2		..		13		6 $\frac{1}{2}$		7 $\frac{1}{2}$		1 $\frac{1}{2}$		7 $\frac{1}{2}$
3		3		..		17		8 $\frac{1}{2}$		9 $\frac{1}{2}$		2 $\frac{1}{2}$		8 $\frac{1}{2}$
	E		E		A		E		B		E		C	E
	4 $\frac{1}{2}$		8		17 $\frac{1}{2}$		8 $\frac{1}{2}$		8		2		2 $\frac{1}{2}$	2
	6 $\frac{1}{4}$		9 $\frac{1}{2}$		23 $\frac{1}{2}$		14		11		2 $\frac{1}{2}$		4	5 $\frac{1}{2}$
E		E		A		E		B		E		C		E
5		2 $\frac{1}{2}$		9		6 $\frac{1}{2}$		4 $\frac{1}{2}$		2 $\frac{1}{2}$		2 $\frac{1}{2}$		2
5 $\frac{1}{2}$		4 $\frac{1}{2}$		16 $\frac{1}{2}$		7 $\frac{1}{2}$		5 $\frac{1}{2}$		2		3		2
	E		A		E		B		E		C		E	D
	3 $\frac{1}{2}$		13 $\frac{1}{2}$		7		5 $\frac{1}{2}$		1 $\frac{1}{2}$		2		1	3 $\frac{1}{2}$
	3 $\frac{1}{2}$		16		10 $\frac{1}{2}$		8 $\frac{1}{2}$		1 $\frac{1}{2}$		2		1	3 $\frac{1}{2}$

Yields are shown in ounces.

Note :—The upper figures indicate weight of grain.  
The lower figures indicate weight of straw.

*Manurial Ratio Experiment with Paddy (Abi)*

## SUMMARY OF RESULTS.

	MEAN YIELDS IN lbs.					General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E			
Per acre	276	295	250	163	136	224	34	102
Percentage on general mean	+ 23.2	+ 31.7	+ 11.6	- 27.2	- 39.2	..	..	..
Percentage on control	+102.9	+116.9	+ 83.8	+ 19.8	..	..	..	..

*Conclusions :—*

$$B=A > D=E; \quad A=C > E.$$

A=Ratio of 1 Nitrogen to  $\frac{1}{2}$  of  $P_2O_5$ .

B=Ratio of 1 Nitrogen to 1 of  $P_2O_5$ .

C=Ratio of 1 Nitrogen to  $1\frac{1}{2}$  of  $P_2O_5$ .

D=Ratio of 1 of Nitrogen to 2 of  $P_2O_5$ .

E=Control.

The same experiment was repeated in Tabi season in the same plots with similar details of treatment.

*Preparatory tillage.*—Hand digging was done in dry fields on 7th Dai 1346 F. (11th November 1936). First hand puddling was done on 18th Isfandar 1346 F. (20th January 1937). 2nd hand puddling on 19th Isfandar 1346 F. (21st January 1937) and third on 22nd Isfandar 1346 F. (24th January 1937).

*Manuring.*—Diammophos was applied on the 22nd Isfandar 1346 F. (24th January 1937). First application of Ammonium Sulphate and Nicifos was given on the 8th Farwardi 1346 F. (9th February 1937). The second dose was applied on the 5th Ardebehisht 1346 F. (9th March 1937).

*Sowing.*—Single seedlings of Himayatsagar Paddy No. 504 were transplanted  $6'' \times 4''$  apart on the 23rd Isfandar 1346 F. (25th January 1937).

*Weeding.*—Only one hand weeding was done on the 11th Ardebehisht 1346 F. (15th March 1937).

*Pests and diseases.*—The crop was slightly attacked by Paddy Stem Borer.

*Harvesting.*—The crop was harvested on the 25th Khurdad 1346 F. (29th April 1937).

*Yields.*—The statement showing the actual yields of the control and manured plots is attached herewith. The results of the yields of the buffer plots are not included in this statement as they were harvested collectively.

MANURIAL RATIO EXPERIMENT WITH PADDY (*tabi*)

	E	A	E	B	E	C	E	D	E
	3½	10	12	16	9	13	5	10½	11½
	7	16	16	16	16	16	16	32	16
2	A	E	B	E	C	E	D	E	
	8	9	18	6	15½	5	10	10	
8	16	32	32	16	32	16	16	16	
	A	E	B	E	C	E	D	E	E
	6½	5	13½	6	12	8	5	8	8
	16	16	32	16	32	16	8	16	16
A	E	B	E	C	E	D	E	E	
9	4½	16	9	12½	9	4	9	13	
24	16	32	32	32	16	16	16	32	
	E	B	E	C	E	D	E	E	A
	4	17	8½	8½	3	12½	9	10	18
	16	48	16	32	16	32	16	32	24
E	B	E	C	E	D	E	E	A	
4	14	6	10	6	6	3	10½	20	
16	32	16	32	30	16	8	32	48	
	B	E	C	E	D	E	E	A	E
	7½	11	16	8	8½	9	8	13	6½
	32	16	32	16	16	26	16	32	8
B	E	C	E	D	E	E	A	E	
4	4	17	6	10½	6	5	11	9½	
16	16	32	16	32	18	16	32	16	
	E	C	E	D	E	E	A	E	B
	10½	24	10½	7	7	10½	13	12	20½
	16	48	16	16	16	16	32	16	32

E	C	E	D	E	E	A	E	B
5	11	1½	8½	8	10½	17½	20	19
16	32	8	32	16	32	48	48	32
C	E	D	E	E	A	E	B	E
7½	4	7	5	5	12	8	28	12
16	8	16	16	8	16	24	32	32
C	E	D	E	E	A	E	B	E
6	2½	5	8	8	12	..	13	8½
8	10	16	10	8	16	..	24	8
E	D	E	E	A	E	B	E	C
5½	6	6	6	11	11	14	11	16
8	8	8	8	16	32	16	16	26
E	D	E	E	A	E	B	E	C
1	3	6	8	19	7	16	6	16
8	8	8	8	32	8	16	8	8
D	E	E	A	E	B	E	C	E
6	10	7	32	12	16	10	10	9
8	16	8	32	16	16	16	8	8
D	E	E	A	E	B	E	C	E
6	8½	20	16	12	18	7	11	7
8	8	16	16	8	16	8	16	8
E	E	A	E	B	E	C	E	D
10½	14	38	15	21	7	5	6	7
16	16	32	16	24	8	16	8	8
E	E	A	E	B	E	C	E	D
8½	5½	8½	12	20	5	3	5	7
8	8	16	8	16	8	8	8	8
E	A	E	B	E	C	E	D	E
5	19	14	23	5	3½	1	3	5
8	32	16	24	8	8	8	8	8

Yields are shown in ounces.

Note :—The upper figures indicate weight of grain.  
The lower figures indicate weight of straw.

## SUMMARY OF RESULTS.

*Manurial Ratio Experiment with Paddy (Tubi)*

	MEAN YIELDS IN lbs.					General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E			
Per acre	2,772	1,683	994	1,377	761	1,537.4	46.5	139.5
Percentage on general mean	÷ 78.0	÷ 8.1	- 36.4	÷ 1.2	- 50.8	..	..	..
Percentage on control	÷ 264.2	÷ 121.1	÷ 30.6	÷ 107.2	..	..	..	..

*Conclusions :—*

$$A > B = D > C > E.$$

A=Ratio of 1 Nitrogen to  $\frac{1}{2}$  of  $P_2O_5$ .

B=Ratio of 1 Nitrogen to 1 of  $P_2O_5$ .

C=Ratio of 1 of Nitrogen to  $1\frac{1}{2}$  of  $P_2O_5$ .

D=Ratio 1 of Nitrogen to 2 of  $P_2O_5$ .

E=Control.

*Experiment No. 3.—Determination of Mohwa Refuse as manure for Paddy.*

*Object.*—To ascertain the quantity of Mohwa Refuse as manure for Paddy.

*Plotting.*—Six plots each measuring  $1/10$ th of an acre in area were laid out to allow of three replications.

*Preparatory tillage.*—The plots were ploughed deep twice with Victory Plough on the 15th Khurdad 1345 F. (19th April 1936) and 21st Thir 1345 F. (26th May 1936). The cultivator was worked on 1st Amerdad 1345 F. (6th June 1936). Three puddlings with Meston Plough were given between 8th Shahrewar 1345 F. (14th July 1936) and 16th Shahrewar 1345 F. (22nd July 1936). The plots were prepared for transplanting after levelling with Jamboo.

*Manuring.*—Mohwa Refuse at 30 lbs. Nitrogen per acre was applied to three alternate plots on 4th Amerdad 1345 F. (9th June 1936) while the remaining three plots were left unmanured as check plots.

*Sowings.*—Double seedlings of Paddy No. 504 were transplanted 6"×4" apart on the 19th Shahrewar 1345 F. (25th July 1936). Gap filling was done on 30th Shahrewar 1345 F. (5th August 1936).

*Weeding.*—One hand weeding was done on 22nd Mehri 1345 F. (28th August 1936).

*Pests and diseases.*—The crop was attacked to some extent by Paddy Hispa.

*Harvesting.*—The paddy was harvested on the 28th Azar 1345 F. (2nd November 1936).

*Yields.*—The statement showing the lay-out plan of the plots and the actual yield in lbs. is as follows:—

### Abi.

B	A	B	A	B	A	
110	118	128	130	84	118	Grain
126	100	162	124	80	72	Straw

Three replications—Each plot 1/10th of an acre.

Length—North-south, Breadth—East-west.

A=Mohwa refuse at 30 lbs. Nitrogen per acre.

B=Control.

### SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.		General mean	Standard error of treatment mean	Critical difference
	A	B			
Per acre ..	1,220	1,070	1,146	69	207
Percentage on general mean .. +	6.4	6.6	..	..	..
Percentage on control ..	..	12.1	..	..	..

*Conclusion.*

A=B

The same experiment was repeated in Tabi season with similar details and in the same plots.

*Preparatory tillage.*—The plots were ploughed cross-wise with Victory Plough on 27th Dai 1346 F. (1st December 1936). The dry soil was stirred once with cultivator on 28th Bahmon 1346 F. (31st December 1936). Puddling was started on 4th Isfandar 1346 F. (6th January 1937) and was finished on 9th Isfandar 1346 F. (11th January 1937).

*Manuring.*—Mohwa Refuse at 30 lbs. Nitrogen per acre was applied to three alternate plots on 25th Bahmon 1346 F. (28th December 1936).

*Sowing.*—Double seedlings of paddy No. 504 at a distance of 6"  $\times$  4" were transplanted on 11th Isfandar 1346 F. (13th January 1937).

*Weeding.*—One hand weeding was done on 29th Farwardi 1346 F. (2nd March 1937).

*Pests and diseases.*—Nothing noteworthy.

*Harvesting.*—The crop was harvested on the 19th Khurdad 1346 F. (23rd April 1937).

*Yields.*—The statement showing the lay-out plan and the actual yields in lbs. follows:—

*Tabi.*

B	A	B	A	B	A	
52	36	31	41	25	52	Grain.
60	45	38	49	31	59	Straw.

There replications, each plot=1/10th of an acre.

Lenght—North-south, Breadth—East-west.

A=Mohwa refuse at 30 lbs. Nitrogen per acre.

B=Control.



## SUMMARY OF RESULTS.

	MEAN YIELDS IN lbs.		General mean	Standard error of treat- ment mean	Critical diffe- rence
	A	B			
Per acre .. ..	430	360	395	88	264
Percentage on general mean .. ..	+ 8.9	— 8.9	..	..	..
Percentage on control	+ 19.4	..	..	..	..

*Conclusion.*

A=B

*Experiment No. 4.—Manurial Experiment with  
Oil-cakes.*

*Object.*—To find out the relative value of different Oil-cakes as manure for Kharif Jowar.

*Soil.*—Light Chalka.

*Plotting.*—Field was divided into 20 sub-plots measuring  $55' \times 24' = 1/33$  acre each. The sub-plots were separated from each other by leaving fallow strips of land in between.

*Preparatory tillage.*—Three ploughings with Victory Plough were given on 1st Dai 1345 F. (6th November 1935), 24th Dai 1345 F. (29th November 1935), 4th Farwardi 1345 F. (6th February 1936). Soil was kept in fine tilth by working Spring Harrow thrice, once Country Bakhar and once cultivator.

*Manuring.*—Powdered safflower cake, castor cake, cotton seed cake and groundnut cake were applied at the rate of 30 lbs. Nitrogen per acre to the allotted plots on 25th Thir 1345 F. (30th May 1936).

*Sowing.*—Sulphur treated local yellow jowar seed was sown behind a cultivator on the 17th Amerdad

1345 F. (22nd June 1936). Seed rate given was 12 lbs. per acre and distance from row to row was 18". Gap filling was done on the 24th Amerdad 1345 F. (29th June 1936) and thinning on the 12th Shahrewar 1345 F. (18th July 1936).

*Germination and growth.*—Germination was very satisfactory but the general growth of the crop was poor and uneven due to scanty rainfall and the effect of leveling.

*Weeding and interculture.*—Two hand weedings, one hand hoeing and one interculture with cultivator were done.

*Rainfall and irrigation.*—Crop was not irrigated, but it received 9.78 inches of rainfall during the growing period.

*Pests and diseases.*—Nothing noteworthy.

*Harvesting.*—Harvesting was done on the 23rd Azur 1346 F. (28th October 1936).

*Yields.*—The lay-out plan shows the actual plot yields of grain and straw in lbs.

#### MANURIAL EXPERIMENT WITH OIL-CAKES.

A	B	C	D	E	A	B	C	D	E	
5	11	10½	3¼	½	nil	nil	nil	nil	nil	Grain
132	167	119	64	24	7	36	22	62	35	Straw
E	D	C	B	A	E	D	C	B	A	
17½	13½	16	13	nil	nil	nil	2	3	3	Grain
166	58	125	36	8	25	27	35	116	108	Straw

Four replications. Size of plot  $55' \times 24' = \frac{1}{33}$  acre.

Length of the plot=North-south.

Breadth of the plot=East-west.

A=Control.

B=Cotton Seed Cake.

C=Groundnut Cake.

D=Safflower Cake.

E=Castor Cake.

## SUMMARY OF RESULTS.

*Manurial Experiments with Oil-Cakes.*

	MEAN YIELD IN lbs.					General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E			
Per acre	66	222.75	235.13	140.25	148.5	162.53	71.14	213.42
Percentage on general mean	— 59.4	+37.05	+55.7	—13.7	— 8.6	..	..	..
Percentage on								

Control— +237.5+256.3+112.3+125.0

*Conclusion.*

$$C=B=E=D=A$$

A=Control.

B=Cotton Seed Cake.

C=Groundnut Cake.

D=Safflower Cake.

E=Castor Cake.

*Experiment No. 5.—Manurial Experiment with Farm Yard Manure and Compost.*

*Object.*—To find out the relative value of Farm Yard Manure and compost as manure for Kharif Jowar.

*Soil.*—Light Chalka.

*Plotting.*—Twelve plots measuring 55'×44'=1/18 acre each in area were prepared in an acre field, leaving sufficient strips of land between the plots for separating them from each other. Four replications of treated and control plots were arranged.

*Preparatory tillage.*—Three deep ploughings with Victory Plough were given on the 28th Azar 1345 F. (3rd November 1935) 24th Dai 1345 F. (29th November 1935) 3rd Farwardi 1345 F. (5th February 1936). Afterwards the soil was kept in fine condition for sowing, by working once Country Bakhar, thrice Spring harrow and twice cultivator.

*Manuring.*—Farm Yard Manure and compost at the rate of 30 lbs. of Nitrogen per acre, were applied in their respective plots on the 25th Thir 1345 F. (30th May 1936).

*Sowings.*—Local Yellow Jowar seed, after being treated with Sulphur dust was sown behind a cultivator

in rows 18" apart on the 17th Amerdad 1345 F. (22nd June 1936). Gap filling was done on the 24th Amerdad 1345 F. (29th June 1936). The thinning of plants to proper distances was done on the 12th Shahrewar 1345 F. (18th July 1936).

*Germination and growth.*—The germination in all the plots was satisfactory but the growth was very uneven and poor probably owing to scanty rainfall and improper uniformity of soil due to fresh levelling.

*Weeding and interculture.*—Two hand weedings, one hand hoeing and one interculture with cultivator were done.

*Rainfall and irrigation.*—No irrigation was given. The rainfall during the whole period of growth of the crop amounted to 9.78 inches.

*Pests and diseases.*—Nothing noteworthy.

*Harvesting.*—The crop was harvested on the 23rd Azur 1345 F. (28th October 1936).

*Yields.*—The following lay-out plan shows the yields of grain and straw of actual plots in lbs.

A	B	C	A	B	C	
$\frac{1}{2}$	$\frac{1}{2}$	$17\frac{1}{2}$	Nil	Nil	7	Grain
24	189	216	16	23	100	Straw
C	B	A	C	B	A	
16	12	$2\frac{1}{2}$	11	Nil	Nil	Grain
292	322	95	146	18	16	Straw

Four replication. Size of plots  $55' \times 44' = \frac{1}{18}$  Acre.

Length—North-south, Breadth—East-west.

A=Control.

B=Compost.

C=Farm Yard Manure.

*Manurial Experiment with Farm Yard Manure and Compost.*

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.			General mean	Standard error of treatment mean	Critical difference
	A	B	C			
Per acre ..	13.50	56.16	232.2	100.62	31.14	93.42
Percentage on general mean ..	— 86.6	— 44.2	+130.8	..	..	..
Percentage on control ..	..	+316.1	+1545.1	..	..	..

*Conclusion.*

A=B

A=Control.

B=Compost.

C=Farm Yard Manure.

*Experiment No. 6.—Paddy Rotation Experiment.*

*Objcet.*—To investigate the possibilities of replacing Tabi rice with any other more profitable rabi crops.

*Plotting.*—20 plots measuring 9/250th acre each in area are permanently laid out in field No. 154. All these plots are sown with paddy in Abi season, but in Tabi each plot is sown with any other Rabi crop reserving two plots for Tabi paddy in each series of 10 plots.

*Preparatory tillage.*—All the plots were ploughed in dry condition with Victory Plough on the 11th Khurdad 1345 F. (15th April 1936). The soil was stirred with cultivator on the 31st Thir 1345 F. (5th June 1936). The plots were puddled thrice with Meston Plough on the 13th, 17th and 18th Mehri 1345 F. (19th, 23rd and

24th August 1936). After that they were prepared for transplanting the seedling after levelling them with Jamboo.

*Manuring.*—Compost at 30 lbs. Nitrogen per acre was applied to all the plots on the 28th Thir 1345 F. (2nd June 1936). A top dressing of Ammophos at the rate of 30 lbs. Nitrogen per acre was given on the 19th Mehri 1345 F. (25th August 1936).

*Transplanting.*—Single seedlings of Himayatsagar Paddy No. 504 were transplanted at a distance of 6"×4" on the 19th Mehri 1345 F. (25th August 1936).

*Weeding.*—No weeding was done.

*Pests and Diseases.*—The crop suffered very badly by a severe attack of Hispa.

*Harvesting.*—The crop was harvested on the 12th Dai 1346 F. (16th November 1936).

In Tabi season the following crops, viz., Paddy, Onions—Garlic—Potatoes—Chillies—Tobacco Groundnut—Wheat and Gram were sown in the particular plots fixed for them in rotation. Preparation of seed-bed could be done in time owing to the scanty rainfall during the year under report.

*Preparatory tillage.*—One deep ploughing with Victory Plough was done in dry condition on the 14th Dai 1346 F. (18th November 1936) to all the plots and the soil was stirred once with cultivator on the 15th Dai 1346 F. (19th November 1936). The paddy plots were ploughed once again with Victory Plough on the 16th Bahman 1346 F. (19th December 1936). Then they were puddled with Meston Plough twice on 2nd and 9th Isfandar 1346 F. (4th and 11th January 1937) and were prepared for transplanting the seedlings after working the Jamboo.

*Manuring.*—No manure was applied.

*Sowing.*—Dates of sowing different crops and transplanting of paddy are given below:—

A. *Paddy*—transplanted on 10th Isfandar 1346 F.  
(12th January 1937).

B. *Onions*—transplanted on 18th Dai 1346 F.  
(22nd November 1936)

- C. *Garlic*—sown on 18th Dai 1346 F. (22nd November 1936).
- D. *Potatoes*—planted on 17th Dai 1346 F. (21st November 1936).
- E. *Tobacco*—transplanted on 17th Dai 1346 F. (21st November 1936).
- F. *Chillies*—transplanted on 17th Dai 1346 F. (21st November 1936).
- G. *Groundnut*—sown on 18th Dai 1346 F. (22nd November 1936).
- H. *Wheat*—sown on 16th Dai 1346 F. (20th November 1936).
- I. *Gram*—sown on 16th Dai 1346 F. (20th November 1936).

*Irrigation*.—All the rabi crops were irrigated thrice during the period of their growth except Chillies Tobacco and Potatoes which were irrigated four times and Paddy was irrigated every alternate day.

*Weeding and Hoeings*.—One weeding and two hoeings were given to all the plots on different dates.

#### *Harvesting*.—

- A. *Paddy*—19th Khurdad 1346 F. (23rd April 1937).
- B. *Onions*—11th Ardibehisht 1346 F. (15th March 1937).
- C. *Garlic*—12th Ardibehisht 1346 F. (16th March 1937).
- D. *Potatoes*—27th Farwardi 1346 F. (28th February 1937).
- E. *Tobacco*—23rd Khurdad 1346 F. (27th April 1937).
- F. *Chillies*—23rd Khurdad 1346 F. (27th April 1937).
- G. *Groundnut*—3rd Ardibehisht 1346 F. (7th March 1937).
- H. *Wheat*—26th Farwardi 1346 F. (27th February 1937).
- I. *Gram*.—14th Farwardi 1346 F. (15th February 1937).

*Yields.*—The following lay-out plan shows the position of the plots as well as the actual yields in lbs. of both Abi and Tabi crops.

		A	A	A	A	A	A	A	A	A	
Abi	..	15	9	11	11	9	14	12	13	10	12 Grain
		51	40	45	60	31	54	37	52	30	50 Straw
		A	I	H	G	F	E	D	C	B	A
Tabi	..	25	7	18	2½	42½	19	44	37½	257	20
		12	8	20	..	..	Cur- ed lea- ves		..	..	25
		A	A	A	A	A	A	A	A	A	
Abi	..	38	28	26	21	29	29	20	15	17	10 Grain
		100	72	85	82	77	73	55	61	47	17 Straw
		A	B	C	D	E	F	G	H	I	A
Tabi	..	17	197	36	131	14	22¾	3½	24	8	15
		23	..	..	..	Cur- ed lea- ves	..	..	27	16	12

Two replications only. Area of each plot=9/250 acre.

The following statement shows the rates of sales of different crops per maund of 80 lbs. during the year 1345-1346 F.

[Statement.



Serial No.	Crop		Rate			
			Rs.	A.	P.	
A	Paddy 504	..	2	5	4	
B	Onions	..	1	5	4	
C	Garlic ..	..	13	5	4	
D	Potatoes	..	5	0	0	
E	Tobacco	..	10	0	0	Cured leaves
F	Chillies ..	..	5	0	0	Fresh-green.
G	Groundnut	..	4	2	8	
H	Wheat ..	..	5	10	8	
I	Gram ..		4	10	8	
	Straw ..	..	0	8	0	

Statement showing produce per acre in shape of money for the year 1845-46 F.

Serial No.	Crop	ABI			Crop	TABI			Grand total														
		VALUE OF				VALUE OF																	
		Grain	Straw	Total		Grain	Straw	Total															
1	Paddy	21	7	6	13	1	8	34	9	2	Paddy	17	0	0	3	0	7	54	9	9			
2	Paddy	15	0	0	9	11	7	24	11	7	Onions	105	1	7	..	..	105	1	7	129	13	2	
3	Paddy	15	0	0	11	4	7	26	4	7	Garlic	170	2	8	..	..	170	2	8	196	7	3	
4	Paddy	14	11	2	12	5	2	27	0	4	Potatoes	151	15	0	..	..	151	15	0	178	15	4	
5	Paddy	15	6	4	9	6	0	24	12	4	Tobacco	47	4	0	..	..	57	4	0	82	0	4	
6	Paddy	17	6	6	11	0	4	28	6	10	Chielies	56	10	0	..	..	56	10	0	85	0	10	
7	Paddy	12	9	10	7	15	10	20	9	8	Groundnut	4	5	2	..	..	4	5	2	24	14	10	
8	Paddy	11	5	6	9	12	10	21	2	4	Wheat	41	4	8	4	1	3	45	5	11	66	8	3
9	Paddy	10	15	0	6	11	2	17	10	2	Gram	12	2	1	2	1	3	14	3	4	31	13	6
10	Paddy	8	14	10	5	13	1	14	11	11	Paddy	4	2	10	3	2	0	7	4	10	22	0	9

*Harvesting.*—The crop was harvested on the 21st Azur 1346 F. (26th October 1936).

In Tabi season the following crops, viz., Paddy, Onions, Garlic, Potatoes, Chillies, Tobacco, Groundnuts, Wheat and Gram were sown in the particular plots fixed for them in rotation.

*Preparatory tillage.*—All the plots were ploughed once with Victory Plough on the 22nd Azur 1346 F. (27th October 1936). Then the seed-bed was prepared for rabi crops after working the disc harrow on the 23rd Azur 1346 F. (28th October 1936). The paddy plots were puddled thrice from the 2nd Isfandar to 9th Isfandar 1346 F. (4th January to 11th January 1937).

*Manuring.*—No manure was applied.

*Sowing and Transplanting.*—

- A. *Paddy*—transplanted on 10th Isfandar 1346 F. (12th January 1937).
- B. *Onions*—transplanted on 7th Dai 1346 F. (11th November 1936).
- C. *Garlic*—sown on 1st Dai 1346 F. (5th November 1936).
- D. *Potatoes*—sown on 29th Azur 1346 F. (3rd November 1936).
- E. *Tobacco*—transplanted on 15th Dai 1346 F. (19th November 1936).
- F. *Chillies*—transplanted on 5th Dai 1346 F. (9th November 1936).
- G. *Groundnut*—transplanted on 27th Azur 1346 F. (1st November 1936).
- H. *Wheat*—transplanted on 27th Azur 1346 F. (1st November 1936).
- I. *Gram*—transplanted on 27th Azur 1346 F. (1st November 1936).

*Irrigation.*—Three irrigations were given to all the Rabi crops, except Onion, Chillies, Tobacco and Potatoes which received four irrigations each.

*Weedings and Hoeings.*—Two hand weedings and two hand hoeings were given to all the crops. Potatoe plots were earthed up twice.

Owing to partial stagnation of water in the low lying field No. 154 in which this experiment is being conducted since last seven years the matter of transfer of the experiment to the adjoining high lying field No. 153 on the south is under consideration. With this object in view the southern field has also been laid out in a similar manner and the experiment is being duplicated there with the same treatment as in the original field from the Tabi season of 1344 F. This being the third year of the experiment in field No. 153 most probably the experiment will be shifted next year. The details and the results of the experiment are given below:—

*Plotting.*—20 plots measuring  $55' \times 24' = 1.33$  acre each in area are permanently laid out during the Tabi season of 1344 F. All these plots were sown with paddy in Tabi of 1344 F. and in Abi of 1345 F. But from the Tabi season of 1345 F. the actual experiment was started. Each plot was sown with paddy in Abi season and with any other rabi crop in Tabi season reserving two plots of Tabi paddy in each series of 10 plots.

*Preparatory Tillage.*—The dry field was ploughed once with Victory Plough on the 20th Khurdad 1345 F. (24th April 1936). The soil was stirred once with cultivator on 31st Thir 1345 F. (5th June 1936). Then the plots were puddled 4 times with Meston Plough on 15th, 16th, 17th and 20th Shahrewar 1345 F. (21st, 22nd, 23rd and 26th July 1936).

*Manuring.*—Compost at the rate of 30 lbs. Nitrogen per acre was applied to all the plots on the 28th Thir 1345 F. (2nd June 1936). A top-dressing of Ammophos at 30 lbs. Nitrogen per acre was given on the 21st Shahrewar 1345 F. (27th July 1936), just before transplanting.

*Sowing.*—Single seedlings of Himayatsagar Paddy No. 504 were transplanted  $6'' \times 4''$  apart on the 21st Shahrewar 1345 F. (27th July 1936) and gap filling was done on the 1st Mehri 1345 F. (7th August 1936).

*Weeding.*—One hand weeding was given on the 22nd Mehri 1345 F. (28th August 1936).

*Pests and Diseases.*—The crop was severely attacked by the Hispa.

*Harvesting.*—

- A. *Paddy*—19th Ardibehisht 1346 F. (23rd April 1937).
- B. *Onions*—12th Ardibehisht 1346 F. (16th March 1937).
- C. *Garlic*—12th Ardibehisht 1346 F. (16th March 1937).
- D. *Potatoes*—27th Farwardi 1346 F. (28th February 1937).
- E. *Tobacco*—23rd Khurdad 1346 F. (27th April 1937).
- F. *Chillies*—23rd Khurdad 1346 F. (27th April 1937).
- G. *Groundnut*—8th Ardibehisht 1346 F. (12th March 1937).
- H. *Wheat*—2nd Ardibehisht 1346 F. (6th March 1937).
- I. *Gram*—5th Ardibehisht 1346 F. (9th March 1937).

Almost all the crops in this plot were normal and gave very good yields.

*Pests and Diseases.*—There was a severe attack of Hispa on paddy.

*Yields.*—The following lay-out plan shows the position of plots as well as the actual yields in lbs. of both abi and tabi crops.

## Field No. 153.

	A	A	A	A	A	A	A	A	A	A	
Abi ..	82	73	76	98	76	77	85	86	68	71	Grain
	100	72	88	91	87	66	68	100	120	86	Straw
	A	I	H	G	F	E	D	C	B	A	
Tabi..	25	20	14	1	34	21	68	21½	186	16	
	30	17	28	0	..	Cured leaves	..	..	..	20	
	A	A	A	A	A	A	A	A	A	A	
Abi ..	92	85	91	81	76	91	90	93	98	78	Grain
	98	76	80	64	51	136	100	102	104	62	Straw
	A	B	C	D	E	F	G	H	I	A	
Tabi..	12	170	27	77	14	30	4	12	7	19	
	15	..	..	..	Cured leaves	..	..	25	10	25	

Two replications.

Dimensions of each plot 55'×24'=1/33 acre.

Length—North-south, Breadth—East-west.

Statement showing the money value of the different crops is attached herewith.

Statement showing produce per acre in shape of money for the year 1345-46 Fashi  
Field No. 153.

Crop	ABI			Crop	TABI			Grand Total
	VALUE OF				VALUE OF			
	Grain	Straw	Total		Grain	Straw	Total	
1. Paddy	83 11 10	20 6 8	104 2 6	Paddy	17 13 0	4 10 3	22 7 3	126 9 9
2. Paddy	76 0 7	15 4 2	91 4 9	Onions	97 14 4	..	97 14 4	189 3 1
3. Paddy	80 5 4	17 5 2	97 10 6	Garlic	133 5 4	..	133 5 4	230 15 10
4. Paddy	86 2 8	15 15 10	102 2 6	Potatoes	149 9 0	..	149 9 0	251 11 6
5. Paddy	73 2 4	15 4 2	88 6 6	Tobacco	72 4 0	..	72 4 0	160 10 6
6. Paddy	80 13 7	20 13 4	101 10 11	Chillies	66 0 0	..	66 0 0	167 10 11
7. Paddy	84 3 8	17 5 2	101 8 10	Groundnut	4 5 2	..	4 5 2	105 14 0
8. Paddy	86 2 8	20 13 4	107 0 0	Wheat	30 6 2	5 2 6	35 8 8	142 8 8
9. Paddy	79 14 2	23 1 7	102 15 9	Gram	26 0 0	2 14 7	28 14 7	131 14 4
10. Paddy	71 10 8	15 4 2	86 14 10	Paddy	16 13 8	4 10 3	21 7 11	108 6 9

*Experiment No. 7.—Comparison of Paddy Varieties.*

*Object.*—To find out the most profitable variety for the Telingana tract.

*Soil.*—Paddy soil.

*Plotting.*—The plan for the above experiment was prepared by the Economic Botanist in which 108 plots of 1/100 acre each were laid out to allow of 9 replications of each variety.

*Preparatory tillage.*—The field was ploughed thrice with Victory Plough in dry condition on the 11th, 18th, Khurdad and 20th Thir 1345 F. (15th, 22nd April and 25th May 1936). The soil was then stirred once with cultivator on the 1st Amerdad 1345 F. (6th June 1936). The plots were puddled three times with Meston Plough from the 1st to 17th Shahrewar 1345 F. (7th to 23rd July 1936). The plots were prepared for transplanting the seedlings after levelling with Jamboo.

*Manuring.*—12,000 lbs. of compost at the rate of 10 cart-loads per acre (1 cart-load=800 lbs.) was put in 1½ acres on the 29th Thir 1345 F. (3rd June 1936).

*Sowing.*—Transplanting of single seedlings of different varieties at 6"×4" apart was done on 13th and 14th Shahrewar 1345 F. (19th and 20th July 1936).

*Weeding.*—One hand weeding was done on the 20th Mehri 1345 F. (26th August 1936).

*Pests and Diseases.*—The crop was seriously attacked by Rice Hispa.

*Harvesting.*—The different varieties of Paddy were harvested according to their date of maturity.

I.

- |                    |                        |
|--------------------|------------------------|
| (1) Teksennal.     |                        |
| (2) Paddy No. 161. | Harvested on 29th Azar |
| (3) Paddy No. 264. | 1346 F.                |
| (4) Paddy No. 248. | 3rd November           |
| (5) Paddy No. 539. | 1936.                  |
| (6) Pusa T. 18.    |                        |



## II.

- (1) Paddy No. 504. Harvested on 30th Azur  
 (2) Paddy No. 541. 1346 F.  
 (3) Paddy No. 263. 4th November 1936.

## III.

- (1) Paddy No. 80. Harvested on 8th Dai  
 (2) Paddy No. 242. 1346 F.  
 (3) Nizamgoad. 12th November 1936.

*Yields.*—The lay-out plan showing the position of the plots and the actual yields in lbs. of grain and straw follows.—

*Comparative Yield Test of Paddy (Abi).*

	B	C	E	I	G	A	D	L	H	K	F	J
Grain ..	8	9	12	13	4 $\frac{1}{4}$	4 $\frac{1}{4}$	12	6	9	13	17	20
Straw ..	8	16	14	7	22	22	16	14	9	14	21	26
	F	I	J	D	G	C	K	B	E	A	L	H
Grain ..	11	15	8	5 $\frac{1}{2}$	6	8	8	9	9	8	7	13
Straw ..	14	23	14	22	22	16	9	9	9	9	11	13
	D	A	B	F	L	E	G	J	H	C	I	K
Grain ..	11	4	11	11	6	5 $\frac{3}{4}$	9	10	10	10	14	14
Straw ..	13	22	14	14	14	22	14	14	10	16	15	15
	K	C	B	J	H	G	L	I	D	A	I	E
Grain ..	20	19	17	15	20	16	9	20	13	12	15	12
Straw ..	25	16	18	20	21	28	14	24	16	28	18	12

	E	I	K	G	A	D	J	H	C	L	B	F
Grain ..	16	17	14	16	13	23	16	18	18	12	17	16
Straw ..	17	18	15	29	27	29	21	19	16	17	18	17
	A	G	C	F	B	L	K	D	J	E	H	I
Grain ..	18	16	13	14	16	10	19	18	19	19	23	22
Straw ..	44	27	16	10	16	15	20	23	25	20	24	23
	A	H	G	I	C	D	L	F	E	K	B	J
Grain ..	20	17	16	14	16	12	10	11	9	12	13	14
Straw ..	41	17	29	15	16	16	14	12	8	12	14	19
	B	L	I	K	E	H	G	A	J	C	F	D
Grain ..	15	11	17	16	17	11	11	12	11	9	12	12
Straw ..	15	16	18	17	18	11	22	29	16	16	13	13
	D	F	G	J	K	B	E	I	H	L	A	C
Grain ..	17	19	16	18	17	14	13	13	10	12	10	9
Straw ..	23	21	27	23	18	14	14	13	10	21	17	16

## SUMMARY OF RESULTS.

MEAN YIELDS IN POUNDS														Critical difference
(General mean)													Standard error of treatment mean	
	A	B	C	D	E	F	G	H	I	J	K	L		
Per acre ..	1120	1,330	1,230	1,370	1,260	1,460	1,220	1,460	1,560	1,460	1,480	920	1,320	103
Percentage on general mean	- 15.2	+0.77	-6.8	+3.8	-4.5	+10.6	-7.6	+10.6	+18.1	+10.6	+12.1	-30.3	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

$I > C = G = A$ ;  $K = (F, H, J) > A = L$ ;  $D = B = E > L$ ;  $C > L$ ;  $G = A = L$ .

A = Nizangoad, B = Tekemnal, C = Himayatsagar No. 80, D = Himayatsagar No. 161, E = Himayatsagar No. 242, F = Himayatsagar No. 248, G = Himayatsagar No. 263, H = Himayatsagar No. 264, I = Himayatsagar No. 504, J = Himayatsagar No. 539, K = Himayatsagar No. 541, L = Pusa T. 18

The same experiment was repeated in Tabi season in the same plots with same details.

*Preparatory tillage.*—Two deep ploughings with Victory Plough were done on the 25th Dai 1346 F. (29th November 1936) and 2nd Bahman 1346 F. (5th December 1936). Soil was stirred once with Spring Harrow on 25th Bahman 1346 F. (28th December 1936). Then the plots were puddled thrice with Meston Plough on the 1st, 8th and 16th Isfandar 1346 F. (3rd, 10th and 18th January 1937), and were levelled with Jamboo for transplanting the seedlings.

*Manuring.*—10,500 lbs. of compost was put on the 18th Bahman 1346 F. (21st December 1936) in  $1\frac{1}{2}$  acres of land.

*Sowing.*—Single seedlings of different varieties of paddy were transplanted 6"×4" apart on the 20th Isfandar 1346 F. (22nd January 1937).

*Weeding.*—One hand weeding was done on the 6th Ardibehisht 1346 F. (10th March 1937).

*Pests and Diseases.*—The crop was slightly attacked by Rice Stem Borer. Damage done was negligible.

*Harvesting.*—

1. Paddy 504 on 25th April 1937 (21st Khurdad 1346 F.).
2. Paddy No. 263 on 27th April 1937 (23rd Khurdad 1346 F.).

And all the remaining 10 varieties on 1st May 1937 (27th Khurdad 1346 F.).

*Yields.*—The following lay-out plan shows the position of the plots and the actual yield in pounds of grain and straw.

*Comparative Yield Test of Paddy (Tabi).*

	B	C	E	I	G	A	D	L	H	K	F	J
Grain ..	8	8	7	10	5	6	6	3	6	7	7	8
Straw ..	10	8	10	10	12	8	7	5	10	8	8	9
	F	I	J	D	G	C	K	B	E	A	L	H
Grain ..	5	9	8	6	5	7	7	7	6	11	3	6
Straw ..	6	12	9	8	9	7	8	9	9	13	5	10
	D	A	B	F	L	E	G	J	H	C	I	K
Grain ..	10	11	6	5	3	6	5	8	7	8	5	6
Straw ..	5	13	7	6	5	11	7	9	9	8	10	7
	K	C	B	J	H	G	L	F	D	A	I	E
Grain ..	6	9	9	8	9	10	5	7	8	7	9	7½
Straw ..	7	9	10	9	13	12	7	8	10	9	10	9
	E	I	K	G	A	D	J	H	C	L	B	F
Grain ..	8	11	9	8	7	7	9	8	8	5	6	4
Straw ..	11	14	10	11	9	9	11	12	8	7	7	5
	A	G	C	F	B	L	D	J	E	K	H	I
Grain ..	7	12	10	6	6	4	6	7	7	8	6	12
Straw ..	9	15	10	7	8	6	7	9	8	11	10	13
	A	H	G	I	C	D	L	F	E	K	B	J
Grain ..	12	9	13	13	10	6	4	6	5	7	7	5
Straw ..	14	13	15	16	10	8	6	7	7	8	9	6
	B	L	I	K	E	H	G	A	J	C	F	D
Grain ..	7	8	13	9	8	5	6	8	5	5	4	6
Straw ..	9	10	15	10	10	9	8	10	6	5	5	8
	D	F	G	J	K	B	E	I	H	L	A	C
Grain ..	9	7	6	9	8	7	8	11	7	4	5	7
Straw ..	11	8	9	11	9	9	11	13	11	6	7	7

*Comparative Yield Test of Paddy (Tapi).*

SUMMARY OF RESULTS.

—	MEAN YIELDS IN LBS.												Stand- and error of treat- ment mean	Critical differ- ence	
	A	B	C	D	E	F	G	H	I	J	K	L			
Per acre ..	822	700	800	722	711	566	777	700	1,033	744	722	433	725	60	180
Percentage on general mean	+13.4	-3.4	+10.3	-0.4	-1.9	-21.9	+7.0	-3.4	+42.5	+2.6	-0.4	-40.2	..	..	..
Percentage on control	..	-14.5	-2.6	-11.9	-13.2	-30.5	-5.4	-14.5	+25.1	-9.2	-11.9	-46.3	..	..	..

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*Conclusion.*

I > A; A > F = LA = C = G = J = (D, K) = E = (B, H).

A = Nizangood, B = Teksenal, C = Himayatsagar No. 80, D = Himayatsagar No. 161, E = Himayatsagar No. 242 F = Himayatsagar No. 248  
G = Himayatsagar No. 263, H = Himayatsagar No. 264 I = Himayatsagar No. 504, J = Himayatsagar No. 539, K = Himayatsagar No. 541,  
L = Pusa T. 18.

*Experiment No. 8.—Comparison of Sugarcane Varieties.*

*Object.*—To select the most profitable variety for the Telingana Division.

*Soil.*—Silted area—Medium Regur.

*Preparatory tillage.*—The preparation of land for Sugar was started after ploughing in a crop of sannhemp on the 6th Aban 1344 F. (12th September 1935). The fields were ploughed afterwards once with Tractor Plough on 1st Dai 1345 F. (6th November 1935). The soil was then stirred with cultivator on the 11th Dai 1345 F. (16th November 1936).

Trench making with hand was started on the 24th Dai 1345 F. (29th November 1935) and the bottom of the trenches was loosened with pickaxes. The Victory Plough was also run twice in trenches with the same object. Trenches were 2' wide and 9" deep alternating with ridges of the same width. The distance from centre to centre of trenches was 4'.

*Plotting.*—700 trenches of 33' each were prepared and 70 varieties were replicated 10 times. Thus each variety occupied an area equal to  $1/33$  of an acre.

*Manuring.*—Green manuring with sann-hemp was done on the 6th Aban 1344 F. (12th September 1935) Castor cake was applied in two doses at 20 maunds per acre each time. 1st half on the 13th Ardibehisht 1345 F. (17th March 1936), and the 2nd half on the 8th Amerdad 1345 F. (13th June 1936), and well mixed with the soil by hoeing with pick axes.

*Sowing.*—Planting of cane sets in trenches was done, from the 14th to 18th Isfandar 1345 F. (17th to 21st January 1937). Thirty sets with three eye-buds in each were planted end to end in small furrows dug in the bottom of the trenches and covered with earth. The eye-buds were kept sideways

*Irrigation and Rainfall.*—The 1st irrigation was given immediately after planting. Subsequent irrigations were given at intervals varying from 10 to 20 days according to crop requirements. In all twelve irrigations were given before the crop reached to stage of maturity.

The rainfall during the period of growth of the crop amounted to 24.07 inches.

*Weeding and Interculture.*—Two hand weedings were done at different dates to remove the weeds from the crop. Every irrigation and nearly every shower of rain was followed by hand hoeing from the time of sowing to the beginning of Amerdad 1345 F. (June 1936), until the plants grew tall enough not to permit the operation. In all seven hand hoeings were done. The trenches were filled up in Amerdad 1345 F. (June 1936). Earthing up of the crop was done from 5th to 10th Mehir 1345 F. (11th to 16th August 1936).

*Growth.*—Almost all the varieties except B.6388 grew very well. Flowering started in the middle of Azur 1346 F. (October 1936). All varieties flowered except, Fiji B, D.109, E.K.28, P.O.J.2714, H.M.320, H.M.544, H.M.544 (striped), H.M.613, Co.219, Co.357, Co.360, Co.401, Co.402, Co.408, Co.413, Co.416, Co.419, Co.427 and Co.429.

*Harvesting.*—Harvesting and crushing of varieties were started on the 24th Isfandar 1346 F. (26th January 1937) and were finished on the 1st Farwardi 1346 F. (2nd February 1937). Each line of each variety in ten series was harvested and weighed separately and then all the 10 lines were mixed for crushing, to manufacture gur.

*Note.*—A catch crop of groundnut was taken in the sugarcane block which gave an average yield of 275 lbs. dried nuts (Bhadegaon, Spanish Peanut) per acre.

*Yields.*—The following statement shows the yields of cane, juice and gur in lbs. of each variety of 10 lines.

[Statement.



*Statement showing results of sugarcane of 'Line Test'*  
1345-1346 F.

Variety	ACTUAL YIELDS OF 10 LINES IN LBS.			YIELD PER ACRE IN LBS.	
	Cane	Juice	Gur	Cane	Gur
Co. 419 ..	3,145	1,824	397	1,03,785	13,101
Co. 434 ..	2,909	1,865	356	95,997	11,748
Co. 511 ..	2,788	1,895	381	92,004	12,573
Co. 426 ..	2,682	1,662	358	88,506	11,814
Co. 423 ..	2,565	1,320	289	84,645	9,537
Co. 509 ..	2,464	1,609	309	81,312	10,197
Co. 421 ..	2,449	1,529	303	80,817	9,999
Co. 432 ..	2,404	1,290	262	79,332	8,646
Co. 244 ..	2,399	1,450	267	79,167	8,811
Co. 513 ..	2,361	1,368	278	77,913	9,174
Co. 437 ..	2,327	1,362	248	76,791	8,184
Co. 433 ..	2,309	1,369	285	76,197	9,405
Co. 413 ..	2,257	1,269	261	74,481	8,613
Co. 355 ..	2,234	1,194	216	73,722	7,128
Co. 429 ..	2,166	1,391	243	71,478	8,019
Co. 290 ..	2,156	1,315	188	71,148	6,204
Co. 301 ..	2,090	1,611	250	68,970	8,250
Co. 408 ..	2,088	1,191	256	68,904	8,448
Co. 436 ..	2,058	1,147	217	67,914	7,161
Co. 519 ..	2,041	1,276	250	67,355	8,250
Co. 416 ..	2,038	1,228	229	67,254	7,557
Co. 407 ..	2,025	1,324	284	66,825	9,372
Co. 243 ..	2,020	1,088	232	66,660	7,656
Co. 331 ..	2,011	1,076	199	66,363	6,567
Co. 435 ..	1,998	1,135	225	65,934	7,425
Co. 356 ..	1,951	934	189	64,383	6,237
Co. 213 ..	1,935	1,143	231	63,855	7,623
Co. 403 ..	1,926	1,145	208	63,558	6,864
Co. 438 ..	1,890	1,110	218	62,370	7,194
Co. 402 ..	1,886	1,157	224	62,238	7,392
Co. 327 ..	1,883	1,093	205	62,139	6,765
Co. 417 ..	1,840	1,139	217	60,720	7,161
Co. 270 ..	1,831	956	196	60,423	6,468
Co. 285 ..	1,807	954	184	59,631	6,072
Co. 404 ..	1,726	406	86	56,958	2,838
Co. 411 ..	1,719	882	152	56,727	5,016
Co. 313 ..	1,715	969	213	56,595	7,029
Co. 223 ..	1,705	1,014	181	56,256	5,973
Co. 360 ..	1,657	909	192	54,681	6,336
Co. 300 ..	1,623	998	183	53,559	6,039
Co. 299 ..	1,619	885	185	53,427	6,105

*Statement showing results of sugarcane of 'Line Test' 1345-1346 Fash.*

Variety	ACTUAL YIELDS OF 10 LINES IN LBS.			YIELD PER ACRE IN LBS.	
	Cane	Juice	Gur	Cane	Gur
Co. 205 ..	1,594	932	171	52,602	5,643
Co. 326 ..	1,569	867	179	51,777	5,907
Co. 381 ..	1,556	830	159	51,348	5,247
P.O.J. 2714 ..	1,517	960	213	50,006	7,029
Co. 400 ..	1,492	877	143	49,236	4,719
Co. 412 ..	1,470	680	127	48,796	2,794
E.K. 28 ..	1,371	631	146	45,243	4,818
Co. 518 ..	1,362	733	166	44,946	5,478
Co. 353 ..	1,359	965	145	44,847	4,785
Co. 219 ..	1,333	750	148	43,989	4,884
Co. 352 ..	1,321	768	134	43,593	4,422
P.O.J. 2883 ..	1,316	681	121	43,428	3,993
Co. 281 ..	1,309	753	151	43,197	4,983
H.M. 613 ..	1,261	698	134	41,613	4,422
H.M. 544 str. ..	1,224	615	103	40,392	3,399
Co. 517 ..	1,176	593	96	38,808	3,168
P.O.J. 2725 ..	1,115	628	112	36,795	3,696
Co. 351 ..	1,079	653	136	35,607	4,488
D. 109 ..	1,051	567	129	34,683	4,257
H.M. 544 ..	1,048	567	87	43,584	2,871
H.M. 320 ..	1,026	561	93	33,858	3,069
Co. 401 ..	1,000	521	108	33,000	3,564
H.M. 617 ..	728	190	39	24,024	2,574
P.O.J. 2878 ..	671	355	60	22,143	1,980
H.M. 608 ..	601	268	41	19,833	1,353
Co. 357 ..	559	340	39	18,347	1,287
H.M. 627 ..	400	250	50	13,200	1,650
Fiji B. ..	312	125	20	10,296	660

NOTE :—B. 6388 was sown in one series only instead of in all the ten, because the seed was limited. Since, even this did not floursih well, gur was not manufactured out of this.

### *Experiment No. 9.—Comparison of Ratoon crops of Sugarcane Varieties.*

*Object.*—To find out the best ratooner varities of sugarcane.

*Soil.*—Silted area—Medium Regur.

*Preparatory tillage.*—At the time of the harvest of the original crop the ridges were broken with pick-axes and after the harvest of the crop, the trenches were dug on both sides of the lines of the old stools of the canes from 26th Isfandar 1345 F. (29th January 1936).

*Manuring.*—Castor cake at the rate of 20 maunds per acre was applied on the 22nd Farwardi 1345 F. (24th February 1936). A second similar application of castor cake was given on 9th Amerdad 1345 F. (14th June 1936) just before the filling of the trenches.

*Irrigation and Rainfall.*—1st irrigation was given just after the preparation of the trenches on the sides of the old stools. Subsequent irrigations were done at intervals varying from 10-20 days according to the requirement of the crop. In all 12 irrigations were given before the crop reached the stage of maturity. The rainfall during the period of growth of the crop amounted to 24.07 inches.

*Weeding and Interculture.*—Each irrigation and nearly each shower of rain till the break of monsoon was followed by a hoeing from the time of 1st irrigation. The trenches were filled and the plots were levelled in Amerdad 1345 F. (June 1936), and earthing up of crop was done from the 1st to 5th Mehir 1345 F. (5th to 9th August 1936).

*Growth.*—The growth of the thick varieties was stunted. Medium and thin varieties grew fairly well. Tillering was not so good as in the original crop. Borer attack was more in ratoon thick canes than in the original crop.

Flowering in the ratoon crop started about a week earlier, i.e., (in beginning of October 1936) than in the original crop except E.K.28, H.M.320, and H.M.544 striped which did not flower at all.

*Harvesting.*—Harvesting and crushing of these varieties were started on 7th Isfandar 1346 F. (9th January 1937) and were finished on 22nd Isfandar 1346 F. (24th January 1937).

*Yields.*—The lay-out plan showing the actual yields of cane and gur in lbs. per plot is attached herewith.

*Sugarcane Varietal Test (Ratoon).*

Field No. 109.

Field No. 108

L	K	J	I	H	G		F	E	D	C	B	A
2,270	2,512	1,332	1,257	2,234	2,436	Cane	2,172	2,383	3,016	2,162	2,272	2,512
1,502	1,643	749	569	1,484	1,773	Juice	1,273	1,310	1,821	1,259	1,339	1,350
281	331	156	97	330	348	Gur	230	294	373	244	304	278
K	J	I	H	G	F		E	D	C	B	A	L
1,970	1,346	1,304	1,824	3,212	2,646	Cane	1,466	2,394	1,651	1,740	1,799	1,141
1,348	828	868	1,207	2,311	1,815	Juice	1,201	1,491	944	1,082	1,007	735
311	169	150	194	422	322	Gur	264	314	189	221	194	136
J	I	H	G	F	E		D	C	B	A	L	K
1,594	1,736	1,434	1,754	1,674	2,090	Cane	2,557	1,507	1,254	1,892	1,026	1,220
738	1,109	666	1,194	1,016	1,453	Juice	1,275	911	698	1,068	649	792
198	216	124	238	187	332	Gur	192	165	138	210	157	168
Field No. 111.							Field No. 110.					
I	H	G	F	E	D		C	B	A	L	K	J
1,618	1,486	2,954	2,290	1,914	2,466	Cane	2,162	2,079	2,408	1,068	987	568
1,032	991	2,038	1,462	1,070	1,543	Juice	1,254	1,243	1,233	697	663	203
191	186	419	229	252	285	Gur	224	268	257	129	134	65
H	G	F	E	D	C		B	A	L	K	J	I
1,308	3,942	2,924	2,332	3,206	2,279	Cane	2,100	2,695	1,231	1,062	940	715
800	2,443	1,885	1,575	2,088	1,243	Juice	1,076	1,564	736	703	570	419
169	492	343	300	405	285	Gur	239	295	137	143	109	72
G	F	E	D	C	B		A	L	K	J	I	H
4,086	3,292	2,682	3,200	2,678	1,896	Cane	1,603	882	1,510	1,202	1,372	1,047
2,647	2,218	1,765	1,870	1,707	1,142	Juice	1,012	789	886	729	846	854
496	302	360	416	329	233	Gur	207	162	178	142	147	169

Each plot=44'×33'=1/30th Acre ; 6 Replications ; Length—North-south ; Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN POUNDS												Stand- ard error of treat- ment mean	Critical differ- ence	
	General mean														
	A	B	C	D	E	F	G	H	I	J	K	L			
Per acre ..	64,530	56,700	62,190	84,180	64,420	74,970	91,920	46,650	40,020	34,920	46,290	38,070	58,740	5,760	17,280
Percent- age on general mean	+9.8	-3.5	+5.8	+43.3	+9.6	+27.6	+56.5	-20.6	-31.9	-40.4	-21.2	-32.5	..	..	..
Percent- age on control	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

G=D>A; F>B; A=E>H; C>I; B>L; H=K=I=L=J.

A=Co. 331, B=Co. 313, C=Co. 300, D=Co. 290, E=Co. 281, F=Co. 223, G=Co. 213, H=E.K. 28, I=H.M. 544 Striped,  
J=H.M. 320, K=P.O.J. 2714, L=P.O.J. 2878.

*Experiment No. 10.—Comparison of Kharif Jowar Varieties.*

*Object.*—To find out the most profitable variety of Kharif Jowar suitable for the Telingana tract.

*Soil.*—Light chalka.

*Plotting.*—40 plots measuring  $119\frac{1}{2}' \times 13\frac{1}{2}' = 1/27$ th acre each in area were prepared for five replications.

*Preparatory tillage.*—Two deep ploughings with Victory Plough were done on the 4th and 18th Farwardi 1345 F. (6th and 20th February 1936). The soil was stirred to keep it in fine condition five times by working the Country Bakhar. Finally the seed bed was prepared by working the Spring Harrow twice on the 11th and 23rd Thir 1345 F. (16th and 28th May 1936).

*Manuring.*—Compost at the rate of 30 lbs. Nitrogen per acre was applied and mixed with harrow on the 24th Thir 1345 F. (29th May 1936).

*Sowing.*—Sowing was done by dropping the seed behind the cultivator in rows  $1\frac{1}{2}'$  apart on the 18th Amerdad 1345 F. (23rd June 1936). Thinning of plants  $1'$  apart was made on 13th Shahrewar 1345 F. (19th July 1936).

*Germination and Growth.*—Germination was very good in all the varieties and growth was also fairly uniform in almost all the plots.

*Weeding and Interculture.*—One hand weeding was done on 23rd Shahrewar 1345 F. (29th July 1936). Hoeing was done three times with hand rakes.

*Rainfall and Irrigation.*—No irrigation was given. Rainfall during the growing period of the crop amounted to 11.17".

*Pests and Diseases.*—Nothing worth mentioning.

*Harvesting.*—All the varieties were harvested on 11th Dai 1346 F. (15th November 1936).

*Yields.*—The following statement shows the lay-out plan and actual plot yield in lbs.

[Statement.

*Kharif Jowar Varietal Test Lay-out Plan.*

185	$1\frac{1}{2}$	A	343	$3\frac{3}{4}$	F
206	$\frac{3}{4}$	G	284	2	B
140	1	D	413	$\frac{1}{4}$	H
168	$1\frac{1}{2}$	C	382	$1\frac{1}{2}$	A
164	$1\frac{1}{2}$	F	304	$\frac{1}{2}$	E
170	2	B	284	$1\frac{3}{4}$	G
137	$\frac{3}{4}$	E	322	4	D
224	$\frac{1}{2}$	H	511	$1\frac{1}{2}$	C
148	$1\frac{1}{2}$	D	283	1	F
238	1	C	457	0	H
239	$1\frac{1}{2}$	A	326	2	B
238	1	F	476	$\frac{1}{2}$	C
196	1	G	357	3	A
174	$\frac{3}{4}$	E	246	$2\frac{1}{2}$	D
168	2	B	336	$1\frac{1}{4}$	F
278	$\frac{1}{2}$	H	221	$\frac{1}{2}$	E
223	$\frac{1}{2}$	E	379	$\frac{1}{2}$	H
177	$1\frac{1}{2}$	D	255	$1\frac{1}{2}$	G
227	$1\frac{1}{2}$	C	266	6	B
112	1	G	Grain Straw.		
289		3 A			

Five replications. Length=North-south, Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.								Stand- ard error of treat- ment mean	Critical differ- ence	
	A	B	C	D	E	F	G	H			
Per acre	67.5	75.6	32.4	56.7	16.7	46.4	32.9	9.7	40.5	11.	34.02
Percentage on general mean.	+66.7	+86.7	-20.0	+40.0	-58.8	+14.6	-18.8	-76.0	..	..	..
Percentage on con- trol.	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

B=A > G; D > E; F > H; G=C=E=H.

A=Aishpuri, B=Cawnpore Dodania, C=Ilaspuri, D=Kodaldani, E=Local White, F=Local Yellow,  
G=Pocha Jonnal, H=Ramkhel.



*Experiment No. 11.—Comparison of Bajra Varieties.*

*Object.*—To find out the most suitable variety for the Telingana tract.

*Soil.*—Chalka.

*Plotting.*—40 plots each measuring  $119\frac{1}{2}' \times 13\frac{1}{2}' = 1/27$ th of an acre each in area were prepared to allow of 5 replications.

*Preparatory tillage.*—Two deep ploughings with Victory Plough were given on the 5th and 20th Farwardi 1345 F. (7th and 22nd February 1936). Country Bakhar was worked seven times to stir the soil and to kill the weeds. The seed bed was prepared after working the Spring Harrow twice on different dates.

*Manuring.*—Compost at 30 lbs. Nitrogen per acre was put and mixed with harrow on 23rd Thir 1345 F. (28th May 1936).

*Sowing.*—Eight different varieties of Bajra seed were sown in their respective plots behind the Cultivator in rows 18" apart on the 14th Shahrewar 1345 F. (20th July 1936). Gap filling was done on 28th Shahrewar 1345 F. (3rd August 1936). The plants were thinned out approximately 9" apart on 3rd Mehir 1345 F. (15th August 1936).

*Germination and Growth.*—Germination was good in all the plots.

*Weeding and Interculture.*—One hand weeding was done on the 13th Mehir 1345 F. (19th August 1936). Two hand hoeings were done on 20th Mehir 1345 F. (26th August 1936) and 1st Aban 1345 F. (6th September 1936).

*Rainfall and Irrigation.*—The crop was not irrigated. The rainfall during the growing period of the crop amounted to 8.26 inches.

*Pests and Diseases.*—Excepting small birds no pest was noticed and damaged caused was negligible.

*Harvesting.*—All the varieties were harvested on 4th Dai 1346 F. (8th November 1936).

*Yields.*—The lay-out plan showing the yields of the individual plots is attached herewith.

*Bajra Varietal Test Lay-out Plan. (Plot No. 65 & 64).*

60	35	A
94	37½	C
105	33	B
72	44	D
102	44	G
80	53	F
102	51	H
91	46	E
86	55	D
116	54	G
94	54	H
122	49	B
84	46	C
86	50	F
88	45	A
73	40	E
84	22	C
73	39	B
70	35	G
39	29	F
38	33	D

54	36	A
52	23	E
60	31	H
98	42	G
84	40	E
80	54	H
112	61	A
60	40	D
62	39½	C
73	35	F
86	35	B
68	28	E
76	33	G
35	24	H
35	19	A
49	21	B
44	20	F
54	41	C
45	21	D
Grain.	Straw.	

Five replications. Each Plot= $119\frac{1}{2}' \times 13\frac{1}{2}' = 1/27$  acre.

Length—North-south. Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.								Stand- ard error of treat- ment mean	Critical differ- ence
	A	B	C	D	E	F	G	H		
Per acre—×	1,058.4	955.8	1,004.4	1,042.2	955.8	1,009.8	1,123.2	1,155.6	90.72	272.16
Percentage on ge- neral mean	+1.8	-8.1	-3.4	-0.3	-8.1	-2.9	+8.0	+11.1	..	..
Percentage on control.				..	..	..	..	..	..	..

## Conclusion.

$$H=G=A=D=F=C=B=E.$$

A—Akola, B—Akola 14 B, C—Akola 32 C, D—Behar, E—Cawnpore Awned, F—Jamnagar, G—Kambo, H—Local.

*Experiment No. 12.—Comparison of Groundnut Varieties.*

*Object.*—To find out the most profitable variety suitable for the Telingana tract.

*Soil.*—Light chalka.

*Plotting.*—42 plots measuring  $116' \times 15' = 1/25$ th acre each in area were prepared. Seven varieties of groundnut were replicated six times.

*Preparatory tillage.*—The land was ploughed deep with Victory Plough three times to remove the stubbles of the previous castor crop on the 9th, 19th and 25th Thir 1345 F. (14th, 24th and 30th May 1936), and the seed-bed was prepared after working Country Bakhar and Spring Harrow.

*Manuring.*—No manure was applied.

*Sowing.*—The seeds of the different varieties of groundnut were dibbled in their respective plots 9" apart in rows 12" apart on the 20th Amerdad 1345 F. (25th June 1936). Gap filling was done on the 3rd Shahrewar 1345 F. (9th July 1936).

*Germination and Growth.*—Germination was fairly good in all the plots but a few seedlings were destroyed by crows. The growth of the crop was fair.

*Weeding and Hoeings.*—Two hand weeding and one hand hoeing were done during the growing period of the crop.

*Rainfall and Irrigation.*—No irrigation was given. The rainfall during the growing period was 9.17" for the small varieties and 10.3" for the large types of groundnuts.

*Pests and Diseases.*—Crows continued to be the general pest from the time of sowing to the maturity of the crop.

*Harvesting.*—All the small varieties were harvested on 24th Aban 1345 F. (29th September 1936) and the big varieties on the 24th Azar 1346 F. (29th October 1936).

*Yields.*—The following statement shows the actual plot yields, and lay-out plan of the experiment.

*Groundnut Varietal Test Lay-out Plan.*

Pods

40	G
33	E
41	C
44	A
44	F
36	D
17½	B
52	E
21	B
37½	D
54	A
52	F
42	C
52	G
46	C
30	B
38½	D
59	G
59	E
68	F
68	A

64	E
45	C
27½	B
64	F
54	A
37	D
75	G
57	E
39	D
29½	B
46	A
47	G
43	C
42	F
20½	B
44	A
42	C
37	D
61	F
49	E
60	G

Six replications. Length of the plot =  $116' \times 15' = 1/25$  acre.  
 Length—North-south. Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.							General mean	Stand- ard error of treat- ment mean.	Critical differ- ence.
	A	B	C	D	E	F	G			
Per acre.      ..	1,292	608	1,079	938	1,308	1,379	1,388	1,143	64.75	194.25
Percentage on general mean .	+13.0	-46.8	-5.6	-18.0	+14.4	+20.7	+21.4	..	..	..
Percentage on control.      ..	..	..	..	..	..	..	..	..	..	..

*Conclusion.*

G=F=E&gt;A&gt;C=D&gt;B

A=Bhadegaon, B=Hebbal No. 1, C=Kanki No. 17, D=Madagaskar erect, E=Small Japan, F=Spanish No 5,  
G=Spanish No. 9.

*Experiment No. 13.—Comparison of Arhar Varieties.*

*Object.*—To find out the most profitable variety suitable for the Telingana tract.

*Soil.*—Light chalka.

*Plotting.*—60 plots measuring  $121' \times 9' = 1/40$ th acre each in area were prepared to allow of six replications of each variety.

*Preparatory tillage.*—Three deep ploughings with Victory Plough were done on the 23rd Dai 1345 F., 16th Farwardi 1345 F. and 25th Farwardi 1345 F. (28th November 1935, 18th February 1936, and 27th February 1936). The soil was stirred twice with Spring Harrow on the 11th and 23rd Thir 1345 F. (16th and 28th May 1936), then the seed-bed was prepared by working the Country Bakhar twice on the 1st Amerdad and 18th Amerdad 1345 F. (6th and 23rd June 1936).

*Manuring.*—No manure was given.

*Sowing.*—Seeds of different varieties of Arhar were hand dibbled 18" apart in rows 3' apart, on the 23rd Amerdad 1345 F. (28th June 1936). Gap filling was done on the 4th Shahrewar 1345 F. (10th July 1936). First thinning was done on the 8th Shahrewar 1345 F. (14th July 1936) leaving two plants at each hill. Final thinning was done on 21st Shahrewar 1345 F. (27th July 1936) when a single plant was left per hill.

*Germination and Growth.*—Germination was very good in all varieties and the growth normal.

*Weeding and Interculture.*—One hand weeding was done on 6th Mehri 1345 F. (12th August 1936) and the other on 8th Shahrewar 1345 F. (14th July 1936). Interculture was done by a Cultivator in between the rows three times on 22nd Shahrewar 1345 F. (28th July 1936), 7th Mehri 1345 F. (13th August 1936) and 27th Mehri 1345 F. (2nd September 1936).

*Rainfall and Irrigation.*—No irrigation was given. The rainfall during the growing period of the varieties is mentioned against their date of harvest.

*Pests and Diseases.*—Pod borer attack was noticed in later stages, but not seriously.

*Harvesting.*—The dates of harvest of different varieties were as follows.—

Variety.		Date of harvest.	Rainfall.
1. Pusa E. ..	}	.. 3-12-1936	12.47"
2. Coimbatore Red		.. 29- 2-1346 F.	
3. Local ..	}	.. 8-12-1936	12.47"
4. Poona Red		.. 5- 3-1346 F.	
5. Nizam Tur ..		20-12-1936	12.47"
		.. 17- 3-1346 F.	
6. Nagpore No. 3	}	.. 5- 1-1937	14.93"
7. Pusa T. G. ..		.. 3- 4-1346 F.	
8. Pusa A.2 ..			
9. Cawnpore ..	}	.. 25- 1-1937	14.93"
10. Pusa 80		.. 23- 4-1346 F.	

*Yields.*—The lay-out plan of the experiment showing the actual yields of individual plots follows:—



*Arhar Varietal Test Lay-out Plan.*

Husk & straw	Grain.					31	8	G
29	16 $\frac{1}{2}$	H	72	9 $\frac{1}{2}$	F	21	11	B
47	9 $\frac{1}{2}$	G	69	5 $\frac{1}{2}$	C	34	6	A
52	4 $\frac{1}{2}$	C	38	11	G	16	11	E
25	15	B	45	6	D	33	6	D
80	11	F	48	11	A	62	8 $\frac{1}{2}$	F
40	10	D	39	20 $\frac{1}{2}$	H	15	8	H
30	18	F	51	10	I	39	6	I
12	8	J	32	18	B	75	7 $\frac{1}{2}$	C
44	10	I	26	10	E	65	8	J
40	13	A	33	6	J	36	8	G
72	9	F	13	8 $\frac{1}{2}$	B	61	6	C
37	19	H	47	10	A	56	8	F
33	18	B	49	10 $\frac{1}{2}$	I	15	11 $\frac{1}{2}$	E
45	11 $\frac{1}{2}$	G	86	10	C	27	6	D
79	8 $\frac{1}{2}$	B	26	12	E	60	12	J
54	9	J	60	7	J	40	7	A
43	6	D	25	5	D	18	6	B
58	10	A	56	8	F	36	7	I
24	13 $\frac{1}{2}$	E	33	7	G	19	10	H
95	9 $\frac{1}{2}$	I	17	8 $\frac{1}{2}$	H			

Area of each plot=121'×9'=1/40 acre.

Six replications.

Length—North-south—Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.										Stand- ard error of treat- ment mean	Critical differ- ence
	A	B	C	D	E	F	G	H	I	J		
Per acre ..	380.0	536.0	280	200.0	504.0	360	363.20	550.0	353.20	392.0	41.20	123.60
Percentage on general mean.	-3.1	+36.7	-28.6	-33.7	+28.5	-8.2	-7.4	+40.3	-9.9	-15.2	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

$$H=B=E>A=G=F=I=J=C=D.$$

A=Cawnpore, B=Coimbatore Red, C=Local, D=Nagpore 3, E=Nizam Tur, F=Poona Red, G=Pusa A, 2, H=Pusa E,  
I=Pusa T. G., J=Pusa 80.

*Experiment No. 14.—Comparison of Tobacco Varieties.*

*Object.*—To find out the most suitable variety for the Telingana tract.

*Soil.*—Light chalka.

*Plotting.*—30 plots measuring  $109' \times 10' = 1/40$ th acre in area were prepared to allow of five replications of six varieties.

*Preparatory tillage.*—The land was ploughed deep once with Victory Plough on the 3rd Farwardi 1345 F. (5th February 1936). Country Bakhar was run four times and the soil was stirred with a Spring Harrow three times.

*Manuring.*—Farm Yard Manure at the rate of 10 cart-loads per acre (cart-load=800 lbs.) was put and mixed with harrow on the 27th Thir 1345 F. (1st June 1936).

*Transplanting.*—Single seedlings of different varieties of tobacco were transplanted at  $2' \times 2'$  on 23rd-24th Shahrewar 1345 F. (29th-30th July 1936). Gap filling was done on the 29th Shahrewar 1345 F. (4th August 1936) and 10th Mehir 1345 F. (16th August 1936). Topping and suckering were started from 30th Mehir 1345 F. (5th September 1936), and were continued till harvest.

*Weeding and Hoeing.*—One hand weeding and four hand hoeings were done.

*Irrigation and Rainfall.*—No flood irrigation was given. The newly transplanted seedlings were hand-watered for three days after transplanting. The amount of rainfall received by the crop was 8.15 inches.

*Pests and Diseases.*—Nothing noteworthy except that a few plants were attacked by the stem borer.

*Harvesting.*—Almost all the varieties matured at a time and were harvested on 27th Dai 1346 F. (1st December 1936). The leaves were cured according to the local method.

*Yields.*—The attached lay-out plan shows the yields of fresh leaves as well as cured leaves of each plot in lbs.

*Tobacco Varietal Test*

Cured leaves	Fresh leaves	
6	66	E
1	8	C
8	65	A
12	70	D
7	108	E
9	66	F
1	9	C
8	45	A
6	32	D
11	42	F
5	26	E
6	42	B
1	7	C
5	15	E

$6\frac{1}{2}$	16	A
4	38	D
12	44	F
7	42	B
5	30	D
6	30	A
1	4	C
8	30	E
9	44	B
4	46	F
1	5	C
8	60	D
9	80	B
6	56	E
12	87	A
9	74	F

5 replications  $109' \times 10' = 1/40$ th acre.

Length—Nurth-south, Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN POUNDS						General mean	Stand-ard error of treat-ment mean	Critical difference
	A	B	C	D	E	F			
Per acre ..	324	304	40	280	240	360	256	39.2	117.6
Percentage on general mean.	+26.5	+18.7	-84.4	+9.3	-6.3	+40.6	..	..	..
Percentage on control.	..	..	..	..	..	..	..	..	..

*Conclusion.*

F > E; A > C; B = D = E > C.

A = Adeock, B = Guntur Broad Leaf, C = Pusa T. 18, D = Pusa T. 28, E = Pusa 142, F = Pusa F = Pusa 177.

*Experiment No. 15.—Comparison of Wheat Varieties.*

*Object.*—To find out the most profitable variety for the Telingana tract.

*Soil.*—Light Regur.

*Plotting.*—60 plots measuring  $129' \times 7.5' = 1/45$  acre each in area were prepared to allow of six replications of ten varieties.

*Preparatory tillage.*—The field was ploughed deep once with Tractor Plough on the 9th Khurdad 1345 F. (13th April 1936) and four times with Victory Plough on 2nd Khurdad 1345 F. (6th April 1936), 23rd Thir 1345 F. (28th May 1936), 21st Mehira 1345 F. (27th August 1936) and 24th Aban 1345 F. (29th September 1936). The seed bed was prepared by working disc harrow on the 28th Aban 1345 F. (3rd October 1936), Country Bakhar on 2nd Azar 1346 F. (7th October 1936) and Cultipacker and Country Bakhar on 6th Azar 1346 F. (10th October 1936).

*Manuring.*—Sann-hemp was buried for green manuring on the 21st Mehira 1345 F. (27th August 1936) and then the plots were manured with Castor Cake at 800 lbs. per acre on the 14th Azar 1346 F. (19th October 1936).

*Sowing.*—Seeds of different varieties of wheat were sown with Cole's Seed Drill in lines 9" apart on the 19th Azur 1346 F. (24th October 1936). Gaps were filled on the 12th Dai 1346 F. (16th November 1936).

*Germination and Growth.*—Owing to the unevenness of the soil the germination was not uniform, but after subsequent irrigations the growth was fairly good.

*Weeding and Hoeing.*—One hand hoeing was done on the 28th Dai 1346 F. (2nd December 1936).

*Irrigation and Rainfall.*—The crop was irrigated twice on the 22nd Azur 1346 F. (27th October 1936) and 30th Azur 1346 F. (4th November 1936). The amount of rainfall received by the crop was 5.56".

*Pests and Diseases.*—Nothing worthy of mention.

*Harvesting.*—Almost all the varieties were harvested on the 26th and 27th Farwardi 1346 F. (27th and 28th February 1937).

*Yields.*—The following lay-out plan shows the position of the plots and the actual yields in lbs.

[*Statement.*

*Varietal Test of Wheat.*

	C	E	F	I	J	B	D	H	A	G	E	D	I	G	A	B	H	C	F	J	D	H	J	G	I	F	E	B	A	C
Grain ..	21½	39	38½	47	40	34½	41½	33	29	34½	35	42½	40½	29	28	30	37	29	36½	34	45	40	40	37	41½	35	30	17	20	17½
Straw ..	9	45	26	56	25	22	14	28	15	13	38	12	21	15	20	18	21	10	21	18	19	26	21	15	46	20	22	12	9	5
	J	G	B	C	H	F	E	A	D	I	J	B	A	I	C	D	F	H	E	G	H	A	I	F	E	B	J	C	D	G
Grain ..	26	27	37	41	23	25	26	32½	32	37	41	42½	46	38	24½	35	31	28	29	15	20	34	28½	37½	26	29	23½	29	40½	20½
Straw ..	15	10	25	26	22	20	31	21	13	45	24	27	25	44	15	14	22	19	20	13	14	22	32	16	12	16	27	11	28	11

Six replications. 120' x 7.5' = 1/45th acre.

Length—North-south.

Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.										Standard error of treatment mean	Critical difference
	A	B	C	D	E	F	G	H	I	J		
Per acre ..	1,425	1,432	1,229	1,787	1,386	1,538	1,229	1,427	1,755	1,538	129.15	387.45
Percentage on general mean.	— 3.4	— 2.9	— 16.7	+ 21.2	— 6.0	+ 4.3	— 16.7	— 3.2	+ 19.0	+ 4.3	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

$D > E$ ;  $I > (C, G)$ ;  $(K, J) = B = H = A$ .

A = Pusa 4, B = Pusa 80/5, C = Pusa 111, D = A. O. 13, E = A. O. 85, F = A. O. 88, G = A. O. 90, H = A. O. 115, I = Bansi, J = Gawnore 13.



*Experiment No. 16.—Comparison of Gram Varieties.*

*Object.*—To find out the most profitable variety for the cultivation in the Telingana tract.

*Soil.*—Light Regur.

*Plotting.*—Forty plots measuring  $121' \times 9' = 1/40$  acre each in area were prepared to allow of five replications of eight varieties.

*Preparatory tillage.*—The land was ploughed deep three times with Victory Plough on the 17th Farwardi 1345 F. (19th February 1936) and 25th Amerdad 1345 F. (30th June 1936) and 29th Shahrewar 1345 F. (4th August 1936). The soil was kept in loose condition by working the Country Bakhar, cultivator and Spring Harrow until the time of sowing.

*Manuring.*—No manure was applied.

*Sowing.*—Different varieties of gram were sown with Cole's Drill in lines 9" apart on the 16th Azur 1346 F. (21st October 1936). Gaps were filled on the 30th Azur 1346 F. (4th November 1936).

*Germination and Growth.*—Germination was uniform and growth was very good in all the plots.

*Irrigation and Rainfall.*—One irrigation was given on 17th Azur 1346 F. (22nd October 1936) just after the sowing, as there was very little moisture in the soil. The rainfall received by the crop during its growth amounted to 5.56".

*Pests and Diseases.*—Nothing noteworthy.

*Harvesting.*—Almost all the varieties were harvested at the same time on 20th Farwardi 1346 F. (21st February 1937).

*Yields.*—The lay-out plan showing the actual yields in lbs. per plot follows:—

[Statement.

*Varietal Test of Grain*

	B	G	C	E	A	D	F	B	C	E	F	H	G
Grain ..	30	Propa-	33	17	24½	33	14	19	22	24	13	20	Propa-
Straw ..	25	gation	31	13	23	25	38	34	30	17	26	42	gation

	A	D	C	D	A	F	H	G	B	G	E	C	E	H	G	F	B	A	D							
Grain .	27	28	26	33	28	20	24	22	Propa	30	Propa	23	18	30½	33	30	29	28	28	23½	27	Propa	15	14½	14	11
Straw .	54	25	36	40	50	38	26	18	gation	24	gation	30	43	65	23	33	40	20	40	2	28	gation	29	24	35	9

Five replications.

Length—North-south, Breadth—East-west,  
121' x 9' = 1/40 acre.

# SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.								General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E	F	H				
Per acre .. ..	1,000	1,120	1,014.0	1,080	920	640	928.0	970	95.20	285.60	
Percentage on general mean ..	+3.1	+15.4	+13.8	+11.8	-5.2	-34.1	-4.4	..	..	..	
Percentage on control ..	..	..	..	..	..	..	..	..	..	..	

## Conclusion.

B=C=D=A=H>F; E=F.

A=Bengal, B=Cawnpore, C=Local, D=Pooa, E=Pusa 17, F=Pusa 25, H=Sabour No. 4.

*Experiment No. 17.—Comparison of Rabi Jowar varieties.*

*Object.*—To find out the most profitable variety for cultivation in Telingana tract.

*Soil.*—Light Regur.

*Plotting.*—Twenty plots measuring  $121' \times 12' = 1/30$  acre each in area were prepared to allow of four replications.

*Preparatory tillage.*—The land was ploughed four times with Victory Plough on the 23rd Farwardi 1345 F. (25th February 1936), 20th Amerdad 1345 F. (4th July 1936) 30th Shahrewar 1345 F. (5th August 1936) and 14th Aban 1345 F. (19th September 1936). Spring Harrow and Country Bakhar were also worked to stir the soil occasionally to maintain the tilth.

*Manuring.*—30 lbs. of Nitrogen per acre was added in the form of compost on the 23rd Aban 1345 F. (28th September 1936).

*Sowing.*—Seed of all the varieties being treated with Sulphur dust was sown with Cole's Seed Drill in rows 18" apart on the 21st Azur 1346 F. (26th October 1936) Gap-filling was done on the 6th Dai 1346 F. (10th November 1936).

*Germination and growth.*—Germination was very good and growth uniform except that of Dagdi and Californian Dwarf.

*Weeding and Interculture.*—One hand hoeing and one hand weeding were done on the 3rd Dai 1346 F. (7th November 1936) and 2nd Bahman 1346 F. (5th December 1936).

*Irrigation and Rainfall.*—The plots were irrigated just after sowing on the 22nd Azur 1346 F. (27th October 1936). Total rainfall received by the crop amounted to 7.19 inches.

*Diseases and Pests.*—Californian Dwarf was badly attacked by the Stem Borer.

*Harvesting.*—All the varieties were harvested on the 26th Ardibehisht 1346 F. (29th March 1937).

*Yields.*—The following lay-out plan shows the actual yields of fresh fodder only. No grain formation took place most probably, due to rains during the flowering period.



*Experiment No. 18.—Comparison of Linseed varieties.*

*Object.*—To find out the most profitable variety for Telingana tract.

*Soil.*—Light Regur.

*Plotting.*—30 plots measuring  $121' \times 9' = 1/40$ th acre of each in area were prepared to allow of five replications of each variety of Linseed.

*Preparatory tillage.*—The field was ploughed deep with Victory Plough four times on the 28th Ardibehisht 1345 F. (1st April 1936), 23rd Thir 1345 F. (28th May 1936), 28th Amerdad 1345 F. (3rd July 1936) and 29th Shahrewar 1345 F. (4th August 1936). Country Bakhar and Spring Harrow were worked occasionally to keep the plot in suitable condition.

*Manuring.*—No manuring was intended for the Linseed crop but due to the scanty rainfall this experiment was conducted in the field originally intended for the wheat varietal test wherein 800 lbs. of castor cake per acre were applied on the 5th Aban 1345 F. (10th September 1936).

*Sowing.*—The seed was sown with hand behind the cultivator in lines one foot apart on the 17th Azur 1346 F. (22nd October 1936). Gap-filling was done on the 5th Dai 1346 F. (9th November 1936). The plants were thinned out in the rows 9" apart on the 19th Dai 1346 F. (23rd November 1936).

*Germination and Growth.*—Germination was very good and the growth in the first two months was very uniform. But afterwards the plants began to die in numbers most probably due to "Wilt" attack.

*Irrigation.*—One irrigation was given to the crop just after sowing on 18th Azur 1346 F. (23rd October 1936).

The amount of rainfall received by the crop was 5.56".

*Weeding and Hoeing.*—One hand hoeing was done on 11th Dai 1346 F. (15th November 1936). One hand weeding was done on the 2nd Bahman 1346 F. (5th December 1936).

*Pests and Diseases.*—Almost all the varieties suffered very badly from “Wilt” diseased to an extent of about 75 per cent. except some plots of Pusa H.55 variety.

*Harvesting.*—All the varieties matured simultaneously and were harvested on the 24th Farwardi 1346 F. (25th February 1937).

*Yields.*—The surviving crop of each variety was measured and harvested. The yields were calculated on the measured portion of the harvested crop. The lay-out plan shows the actual and calculated yield of each variety.



*Varietal Test of Linseed.*

	F	A	E	C	D	B	F	C	E	B	A	D	E	F	B
Actual yield	0.25	15.5	Nil.	1.5	4	1	Nil.	0.5	0.25	3.5	10	7.5	1	1.5	6.5
Calculated yield per plot	6.05	15.5	Nil.	5.18	8.8	3.27	Nil.	4.3	15.1	7.05	11	7.5	4.8	3.8	9.7
	C	D	A	D	C	E	A	F	B	A	F	E	D	B	C
Actual Yield	8.5	11.0	10.5	5.0	2	2	7	1.5	4.5	9	112	6	8.5	9	7
Calculated yield per plot	8.5	11.0	10.5	13.15	5.5	4.03	11.7	4.2	8.0	11.58	3.96	8.06	11.06	10.78	7

5 replications.  $121' \times 9' = 1/40$ th acre.

Length—North-south. Breadth—East-west.

# SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.						General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E	F			
Per acre .. ..	482.40	310.40	244.0	412.80	256.0	144.0	308.0	46.80	140.4
Percentage on general mean ..	+56.6	+0.8	-20.8	+34.0	-16.9	-53.3	..	..	..
Percentage on control ..	..	..	..	..	..	..	..	..	..

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## Conclusion.

A > B; D > E; B > F; E = C = F.

A = Local, B = Pusa H. 21, C = Pusa H. 55, D = Pusa H. 68, E = Pusa T. 12, F = Pusa T. 124.

*Experiment No. 19.—Plantation of Sugarcane on flat land.*

*Object.*—To reduce the cost of cane cultivation by using bullock power.

*Soil.*—Red chalka.

*Plotting.*—Three plots of 6 ghuntas each in area were prepared in a field to plant three varieties of sugarcane, viz., Co.213, Co.290 and P.O.J. 2878.

*Preparatory tillage.*—The plot was ploughed deep once with Victory Plough on the 17th Bahman 1345 F. (21st December 1935) and then it was stirred with Harrow and Country Bakhar.

*Manuring.*—Well rotted compost at the rate of 20 cart-loads per acre was applied on the 21st Isfandar 1345 F. (24th January 1936). Castor cake was applied in two doses at the rate of 30 lbs. of Nitrogen per acre. 1st on the 13th Ardibehisht 1345 F. (17th March 1936) and 2nd on the 6th Amerdad 1345 F. (11th June 1936).

*Planting.*—Furrows were made 3' apart by Victory Plough. 150 setts having three eye-buds in each sett were planted end to end in the furrow and were covered with earth by pata, on the 24th Isfandar 1345 F. (21st January 1936).

*Germination and Growth.*—Germination and growth were very good and uniform.

*Irrigation and Rainfall.*—The crop was irrigated soon after planting. Subsequent irrigations were given whenever required at an interval of ten to twenty days. In all eighteen irrigations were given to the crop till it reached its maturity.

The amount of rainfall received by the crop was 24.07".

A very strong storm of wind followed by  $\frac{1}{2}$ " of rain on the 22nd Azur 1346 F. (27th October 1936) lodged the crop to about 25 per cent.

*Hoeings and Weedings.*—First two hoeings before the germination of the crop were done by hand labour. But

subsequent hoeings which followed almost every irrigation or a shower of rain were done with bullock cultivator. In all thirteen hoeings and one weeding were given.

*Harvesting.*—The harvesting of the crop was started on the 23rd Isfandar 1346 F. (25th January 1937) and was harvested occasionally to supply seed to Agricultural Officers in the districts for sowing.

*Yields.*—The following statement shows the actual yield of cane in lbs. and the calculated yield per acre. As no Gur was manufactured out of this the cane yields only are given in the statement.

Sl. No.	Variety of Cane	ACTUAL YIELDS IN LBS.			Calculated acre yield in lbs.
		Harvested cane	Cane cut by rats	Total weight	
1	Co. 213 ..	12,420	204	12,624	84,160
2	Co. 290 ..	13,040	752	13,792	91,946
3	P.O.J. 2878 ..	9,752	11	9,763	65,086

*Note.*—This experiment was started on the suggestion of Sugarcane Expert, Coimbatore. He suggested the method of ridging up the sugarcane crop with bullocks to reduce the cost of cultivation. In this experiment no trenches were made, the field was left flat and the sets were planted in ploughed furrows 3 ft. apart, and covered up with pata. Long narrow beds were made with bullock power for irrigation. Inter-cultures were done with bullock cultivator. Earthing was also done with Victory Plough.

*Experiment No. 20.—Planting Time Test with Californian Dwarf Jowar.*

*Object.*—To study whether Californian Dwarf Jowar can profitably be grown as a late crop in case the early sown Kharif crops fail for want of rains in the beginning.

*Soil.*—Light loamy soil.

*Plotting.*—Three plots of  $\frac{1}{3}$  acre each in area were selected for this test to sow each plot with an interval of one month between each sowing.

*Preparaory tillage.*—All the three plots were deep ploughed with Victory Plough on 3rd Ardibehisht 1345 F. (7th March 1936), 4th Amerdad 1345 F. (9th June 1936) and 18th Amerdad 1345 F. (23rd June 1936). Then the soil was kept in good condition by working Country Bakhar occasionally.

*Manuring.*—Farm Yard Manure at the rate of 10 cart-loads per acre (1 cart-load=800 lbs.) was applied on the 17th Amerdad 1345 F. (22nd June 1936).

*Sowing.*—1st plot was sown with sulphur treated Californian Dwarf seed, behind the cultivator on the 22nd Amerdad 1345 F. (26th June 1936).

2nd plot was sown as above on 21st Shahrewar 1345 F. (27th July 1936). And the 3rd plot was sown similarly on the 22nd Mehri 1345 F. (28th August 1936).

*Weeding and Hoeing.*—Each plot received one hand weeding and was hoed twice with Cultivator.

*Irrigation and Rainfall.*—No irrigation was given. The rainfall during the growing period of the crop of 1st plot was 9.16".

*Pests and Diseases.*—First sown plot had a slight attack of Jowar Stem Borer, 2nd and 3rd plots were totally destroyed by shortage of rainfall, and a very bad attack of Jowar Stem Borer.

*Harvesting.*—The 1st plot was harvested on 2nd Azar 1346 F. (7th October 1936). The remaining two plots were not harvested and the cattle were allowed to graze.

*Yields.*—The following statement shows the actual yield of first plot and the calculated yield per acre in lbs.

Sl. No.	Plot No.	Date of sowing	Date of harvest	ACTUAL PLOT YIELDS IN LBS.		CALCULATED ACRE YIELDS IN LBS.	
				Grain	Straw	Grain	Straw
1	1st	26- 7-1936	7-10-1936	3 $\frac{3}{4}$	232	11 $\frac{1}{4}$	696
		22- 9-1945F	2- 1-1946F				
2	2nd	27- 7-1936	..	..	..	..	..
		21- 9-1945F					
3	3rd	28- 8-1936	..	..	..	..	..
		22-11-1945F					

*Experiment No. 21.—Planting Time Test with Irrigated Groundnuts in Rabi season.*

*Object.*—To study the behaviour of groundnut as an irrigated crop in rabi season and to find out the best time for planting in order to secure the maximum yields.

*Soil.*—Red chalka.

*Preparatory tillage.*—The land was ploughed thrice. First on 9th Farwardi 1345 F. (11th February 1936) Second on 17th Amerdad 1345 F. (22nd June 1936) and third on 31st Shahrewar 1345 F. (6th August 1936). Country Harrow and Spring Tooth Cultivator were worked as required to keep the soil free from weeds.

*Manuring.*—No manure was applied.

*Plotting.*—Forty-eight plots each measuring 51' x 16' =  $\frac{3}{4}$  gunta were laid out to allow of six sowings replicated twice.

*Varieties.*—Two big-sized nut varieties, namely Kanki No. 17 and Hebbal No. 1 and two small-sized nut varieties, namely, Spanish Peanut No. 5 and Spanish Peanut No. 9 were selected for sowings.

*Sowings.*—The seeds of each variety were dibbled in each plot replicated twice every month starting from 16th Azur 1346 F. (21st October 1936) and ending on 16th Ardibehist 1346 F. (20th March 1937), and plot consisted of 12 lines.

*Germination and Growth.*—Germination was very good in all the plots of different varieties and in all the sowings growth was also fairly uniform.

*Weedings and Interculture.*—Interculture and weeding were done as shown in the statement attached.

*Irrigation.*—From 5 to 9 irrigations were necessary depending upon the season of growth of the various varieties of different sowings as shown in the statement attached.

*Pests and Diseases.*—Nothing worthy of mention except wild pigs and crows.

*Harvesting and Yields.*—The digging of nuts was carried out as soon as the crop matured in each case. The following statement shows the experimental data as well as the yields.

[Statement.

Groundnut data showing yield per acre

Date of sowing	Name of variety	Irriga- tions	Inter- cul- ti- va- tions	Weed- dings	date of harvest	YIELDS IN LBS.				Average yield per acre in
						Actual	Calculated per acre			
							1st plot	2nd plot	1st plot	
21st October 1936 16th Azar 1346 F.	{ Spanish Peanut No. 5 Spanish Peanut No. 9 Hebbal No. 1 Kanki No. 17 }	8	4	2	{ 10th March 1937 1346 F. 6th Ardihebisht 21st March 1937 17th Ardihebisht 1346 F. }	6	5	320	267	293.5
		8	4	2		16	17	853	907	880
		8	4	2		21	23	1,120	133	626.5
		8	4	2		19	9½	1,013	507	760
22nd November 1936 18th Dai 1346 F.	{ Spanish Peanut No. 5 Spanish Peanut No. 9 Hebbal No. 1 Kanki No. 17 }	8	3	1	{ 21st March 1937 1346 F. 17th Ardihebisht 16th April 1937 12th Khurdad 1346 F. }	6	3	320	160	240
		8	3	1		5	3	267	160	213.5
		9	3	2		3	11	160	587	373.5
		9	3	2		7	10	373	533	453
23rd December 1936 20th Bahman 1346 F.	{ Spanish Peanut No. 5 Spanish Peanut No. 9 Hebbal No. 1 Kanki No. 17 }	6	3	4	{ 16th April 1937 12th Khurdad 1346 F. 13th May 1937 14th Thir 1346 F. }	10	31	533	1,653	1,093
		6	3	4		13	25	693	1,333	1,013
		7	3	5		10	32	373	1,707	1,040
		7	3	5		21	41	1,120	2,187	1,653.5
20th January 1937 18th Isfandar 1346 F.	{ Spanish Peanut No. 5 Spanish Peanut No. 9 Hebbal No. 1 Kanki No. 17 }	5	2	4	{ 19th May 1937 14th Thir 1346 F. 16th June 1937 11th Amardad 1346 F. }	8	23	427	1,227	827
		5	2	4		6	23	320	1,227	773.5
		8	2	5		2	7	107	373	240
		8	2	5		1	3	53	160	106.5
20th February 1937 18th Farwardi 1346 F.	{ Spanish Peanut No. 5 Spanish Peanut No. 9 Hebbal No. 1 Kanki No. 17 }	8	2	5	{ 16th June 1937 11th Amardad 1346 F. 15th July 1937 9th Shchrewar 1346 F. }	14	18	747	960	853.5
		8	2	5		15	15	800	853	826.5
		9	2	6		17	14	907	747	827.0
		9	2	6		5	15	267	800	533.5
20th March 1937 16th Ardihebisht 1346 F.	{ Spanish Peanut No. 5 Spanish Peanut No. 9 Hebbal No. 1 Kanki No. 17 }	7	1	5	{ 15th July 1937 9th Shchrewar 1346 F. 5th July 1937 10th Shchrewar 1346 F. }	19	19	1,013	1,013	1013
		7	1	5		23	34	1,227	1,813	1,520
		7	1	5		21	10	1,120	533	826.5
		7	1	5		27	25	1,440	1,333	1,386.5



## SUMMARY OF YIELDS PER ACRE.

Sl. No.	Name of variety	AVERAGE YIELDS IN POUNDS PER ACRE				
		October sowing	November sowing	December sowing	January sowing	February sowing
1	Spanish Peanut No. 5	293.5	240	1,093	827	8
2	Spanish Peanut No. 9	880.0	213.5	1,013	773.5	8
3	Hebbal No. 1	626.5	373.5	1,040	240	
4	Kanki No. 17	760.0	453	1,653.5	160.5	1

*Observation Plot of Miscellaneous Kharif Crops*

*Object.*—To grow and observe almost all the miscellaneous Kharif Crops in Telingana tract to study economics and yields.

*Plotting.*—78 plots measuring  $66' \times 8\frac{1}{2}'$  (1/80th acre) each in area were made with a arrange two replications of each crop.

*Preparatory tillage.*—The fields were ploughed with Victory Plough on 2nd Isfandar 1345 F. (5 ary 1936). Country Bakhar was worked twice, the soil was stirred occasionally with Spring Peg Harrow and Cultivator till the time of sowing.

*Manuring.*—Compost at the rate of 20 cart-load acre (1 cart-load=800 lbs.) was applied on 3 1345 F. (5th June 1936).

*Sowing.*—Almost all the seeds of different crops were hand dibbled on the 24th Amerdad 1345 F. (24 1936). Gaps were filled on the 5th Shahrewar (11th July 1936). Some of the crops were thin to proper distance on 1st Mehir 1345 F. (7th 1936).

*Weedings and Hoeings.*—Two hand weedings and hand hoeing were given on different dates.

*Harvesting.*—The different crops were harvested on different dates as they matured.

*Yields.*—The following statement shows the yields of the plots and the calculated yields per acre in the date of harvest of each crop.

Statement showing the Yields of Miscellaneous Kharif crops grown on the Farm during the year 1345-1346 Fash.

Sl. No.	Name of crop	Date of harvest	1ST SERIES		2ND SERIES		CALCULATED AVERAGE YIELD IN LBS. PER ACRE	
			Grain	Straw	Grain	Straw	Grain	Straw
1	Ambada white ..	10-11-1936	3-1	..	3-12	..	272.5	..
2	Ambada Red ..	20-11-1936	19-3	..	10-0	..	1,160.0	..
3	Ballar ..	24-12-1936	12-0	..	8-4	..	810.0	..
4	Beans-Local Small ..	28-9-1936	0-4½	..	..	..	22.5	..
5	Jowar American Red ..	20-10-1936	1-1	48	..	..	85.0	1,720
6	Jowar (Sweet) ..	26-10-1936	2-11	94	0-8	18	127.5	1,720
7	Kangni ..	22-9-1936	1-14	8	10-12	23	505.0	1,240
8	Kudro ..	20-10-1936	2-7	..	8-12	..	447.5	..
9	Kulthi ..	8-12-1936	5-12	..	4-12	..	420.0	..
10	Lachna ..	26-10-1936	..	7	..	6	..	520
11	Lobia ..	24-10-1936	3-11	50	3-9	65	290.0	4,600
12	Moth ..	10-11-1936	2-0	..	1.5	..	132.5	..
13	Mash (Udid) Local ..	30-9-1936	1-2	11	1-1	14	127.5	1,000
14	Mung ..	28-9-1936	0-2	5	2-14	17	120.0	880
15	Maize (American long) ..	2-10-1936	3-8	19	2.4	20	230.0	1,560
16	Maize (American short) ..	2-10-1936	3-14	31	0-13	14	178.5	1,800
17	Patwa (new type) ..	8-12-1936	12-8	..	5-0	..	700.0	..
18	Patwa No 3 ..	18-11-1936	3-3	..	2-0	..	207.5	..
19	Patwa No. 6 ..	24-10-1936	1-15	..	2-10	..	182.5	..
20	Rajgira (brown) ..	9-11-1936	6-14	..	4-5	..	447.5	..
21	Rala ..	8-10-1936	0-2	2-0	14-13	45	597.5	1,880
22	Ramtil ..	22-10-1936	0-8	..	1-3	..	67.5	..
23	Ravan ..	28-9-1936	4-7½	5	6-12	7	448.75	480
24	Savan ..	2-10-1936	0-1	3	17-8	105	727.5	4,320
25	Soya beans-large brown.	26-10-1936	0-1	5	0.4	..	12.5	400
26	Soya beans-large Yellow	26-10-1936	0-8	..	0-6	..	35.0	..
27	Soya beans-small yellow	6-11-1936	0-11	..	2-0	..	107.5	..

Statement showing the Yields of Miscellaneous Kharif crops grown on the Farm during the year 1345-1346 Fash.

Sl. No.	Name of crop	Date of harvest	1ST SERIES		2ND SERIES		CALCULATED AVERAGE YIELD IN LBS. PER ACRE	
			Grain	Straw	Grain	Straw	Grain	Straw
28	Soya beans-small green	9-11-1936	2-8	..	0-13	..	132.5	..
29	Sunflower ..	26-10-1936	3-11	..	3-10	..	292.5	..
30	Til black, Nizamabad ..	12-10-1936	1-13	..	2-13	..	185.0	..
31	Til Brown, Nizamabad	14-10-1936	21-7	..	7-5	..	1,150.0	..
32	Til White, Nizamabad	12-10-1936	2-15	..	6-1	..	360.0	..
33	Til Black, Local ..	28- 9-1936	1-0	..	5-4	..	250.0	..
34	Til White, Local ..	12-10-1936	2-1	..	7-0	..	362.5	..
35	Rajgira White ..	9-11-1936	3-16	..	2-0	..	225.0	..
36	Beans Local Big ..	12-12-1936	0-4	..	0-2	..	15.0	..
37	Mash (Udid) Lucknow No. 1.	6-10-1936	3-4	4	3-7	..	267.0	320
38	Soank ..	7-10-1936	6-10	21	0-4	3	275.0	960
39	Mash (Udid) Lucknow No. 2.	12-10-1936	..	..	2-2	5	170.0	400

### Observation of Miscellaneous Rabi Crops.

*Object.*—To grow and observe almost all the miscellaneous Rabi Crops which could be grown in the Telin-gana Tract and to study their economics and yields.

*Plotting.*—40 plots each measuring 64'/17'=1 Gunta each in area were prepared to allow of four replication of each crop.

*Preparatory tillage.*—After burying sannhemp for green manuring on 27th Mehir 1345 F. (2nd September 1936) the plot was once deep ploughed with Victory Plough on 23rd Aban 1345 F. (28th September 1936).

Country Bakhar was worked thrice to prepare the seed bed and to keep the soil in good condition.

*Manuring.*—A crop of sannhemp was ploughed in as green manure on 27th Mehir 1345 F. (2nd September 1936).

*Sowings.*—All the crops were hand dibbled on 27th Azur 1346 F. (1st November 1936). Gaps were filled in on 14th Dai 1346 F. (18th November 1936). Some crops were thinned out to proper distances on 26th Dai 1346 F. (30th November 1936).

*Irrigations.*—As the season was very dry three irrigations were given during the period of growth on the following dates:—

1st irrigation—3rd Dai 1346 F. (7th November 1936).  
 2nd do 16th Dai 1346 F. (20th November 1936).  
 3rd do 13th Bahman 1346 F. (16th December 1936).

*Weeding and Hoeings.*—One hand weeding and two hoeings were done.

*Harvesting.*—The varieties were harvested as they matured.

*Yields.*—The statement showing the actual yield and the calculated acre yield is given below.

*Statement showing the Yields of Miscellaneous Rabi crops grown on the Farm during the year 1345—1346 Fasli.*

Sl. No.	Name of crops	Date of harvest	1ST SERIES		2ND SERIES		CALCULATED AVERAGE	
			Grain lbs.	Straw lbs.	Grain lbs.	Straw lbs.	Grain lbs.	Straw lbs.
1	Corriander	20-2-1937	52	..	47	..	990	..
2	Lac ..	10-3-1937	32	..	30	..	620	..
3	Linseed H. 10	10-3-1937	10	..	6	..	160	..
4	Linseed H. 68	4-3-1937	16	..	17	..	333	..
5	Linseed T. 121	10-3-1937	9	..	12	..	210	..
6	Maize Local	14-3-1937	5	..	..	..	100	..
7	Maize American Short.	14-3-1937	36	140	..	..	720	2,800
8	Masoor Local	4-3-1937	5	..	4½	..	95	..
9	Masoor Pusa 11-86	20-2-1937	15	..	22	..	370	..
10	Oats Local	4-3-1937	72	..	..	..	1,440	..
11	Oats State Pride	4-3-1937	10	..	8	..	180	..
12	Safflower Local	14-3-1937	40	..	63	..	1,030	..
13	Sunflower	4-3-1937	8	..	..	..	160	..
14	Wheat Pusa 101	21-2-1937	54	..	49	..	1,030	..
15	Wheat Pusa 52	20-2-1937	64	..	65	..	1,290	..
16	Gram-Pusa T. 58	10-3-1937	..	..	6	..	120	..

N.B.—Each plot measure 64' × 17' = 1 ghunta (1/40 acre in acre).

*Observation of Rhizome—Root and Tuber Crops.*

*Object.*—In order to study the behaviour of the various rhizome and Tuber crops in the Telingana tract a plot is reserved to make such observations and the following crops were sown:—

- |                   |                    |
|-------------------|--------------------|
| 1. Turmeric.      | 2. Ginger.         |
| 3. Elephant foot. | 4. Yam.            |
| 5. Potatoes.      | 6. Sweet Potatoes. |
| 7. Arvi.          |                    |

*Turmeric.*—Turmeric seed was preserved on the Farm from the varieties procured last year and some fresh seed was also obtained from Gudivada, and Tenali. The different varieties of Turmeric were planted on ridges  $2\frac{1}{2}'$  apart with the distance between the plants being 9". Turmeric from Gudivada, Viccarabad and Medak were planted on 18th Amerdad 1345 F. (23rd June 1936) and the variety from Tenali was planted on 6th Shahrewar 1345 F. (12th July 1936). The statement attached shows the yields of all these different varieties.

*Ginger.*—Ginger tubers were obtained from the Rudroor Farm in the Nizamabad district and were planted on broad ridges system on the 16th Shahrewar 1345 F. (22nd July 1936). The statement attached shows the yields obtained.

*Elephant Foot (Suran).*—Seed from the last year crop of Gudivada suran was preserved on the Farm. As it was slightly pungent a fresh consignment of Elephant Foot seed was obtained from Gujarat and was planted on 22nd-23rd Amerdad 1345 F. (27th-28th June 1936) on broad ridge system. The yield is shown in the affixed statement. Gujarat Suran is found to be sweet and was appreciated very much.

*Yam.*—A fresh consignment of Yam seed was obtained from Gujarat and was planted on 6th Shahrewar 1345 F. (12th July 1936) on broad ridge system. The crop gave a very high yield, and seems to be promising.

*Potatoes.*—Potato seed of different varieties was preserved from the Farm stock of last year. They were

planted on narrow ridges on 20th Amerdad 1345 F. (25th June 1936). The yields obtained are not encouraging.

*Sweet Potatoes.*—Vines of sweet potatoes were obtained from outside and planted on the Farm. The yields are given in the statement appended. Since last two years it was observed that the crop was often attacked by insect and was damaged very much by wild pigs.

*Arvi.*—The seed of Arum (arvi) was obtained from the local market and was planted on the 18th Amerdad 1345 F. (23rd June 1936) on narrow ridges at  $2\frac{1}{2}' \times 9''$  apart. The yields are given in the statement below:—

*Note:*—Palwal Vines which were planted in the new area failed to grow and no trace is left.

Sl. No.	Name of crop			Area planted in ghuntas	Actual yields	Calculated yields in lbs. per acre
1	<i>Turmeric</i> :—					
	Viccarabad	..	..	10 $\frac{1}{2}$	973 lbs	3,707
	Medak	..	..	3 $\frac{1}{2}$	366 lbs	4,183
	Gudivada	..	..	7	123 lbs	703
	Tenali ..	..	..	3 $\frac{1}{2}$	570 lbs	6,514
2	<i>Suran</i> :—					
	Gudivada	..	..	$\frac{1}{2}$	41 lbs	3,280
	Gujerat	..	..	3	465 $\frac{1}{2}$ lbs	6,207
3	<i>Yam</i> —Gujerat	..	..	3	1,106 lb	14,747
4	<i>Ginger</i> —Rudrur	..	..	3 $\frac{1}{2}$	17 lbs	194
5	<i>Potatoes</i> :—					
	Small Japan	..	..	1/9	13 oz.	293
	Nilgiris	..	..	1/9	8 oz.	180
	Bangalore	..	..	1/6	18 oz.	360
	Phulwa	..	..	4 1/10	27 lbs	263
6	Sweet Potatoes	..	..	4	..	..
7	Arum (Arvi)	..	..	3 $\frac{1}{2}$	114 lbs	1,303

*Note* :—Sweet Potato crop was entirely spoiled by wild pigs and insect attack.

*Fodder grasses.*

Seeds of Anjan Grass—Buffalo Grass—procured from Punjab were sown to multiply the seeds to extend their area on the Farm. Sufficient quantity of seed of Buffalo Grass was collected. But the seed of the Anjan Grass could not be obtained in sufficient quantity, most probably due to scanty rainfall.

Setts of Elephant, Napier and Guinea Grass which were planted in regular plots last year. The yields of combined cuttings are given below.

Setts of Kikuyu and Rhodes Grasses were obtained from outside and were planted in small areas for multiplication.

Name of Grass	Area cultivated in ghuntas	No. of cuttings	Yield in lbs of green fodder	Calculated acre yields in lbs.
Elephant Grass ..	30	4	5,632	7,509
Guinea Grass ..	30	4	4,376	5,834
Napier Grass ..	20	4	3,616	7,232

*General Crops.*

Besides the Experimental Crops, certain general crops were also grown on the Farm with the following objects:—

1. To multiply seeds for distribution.
2. To procure fodder and concentrates for cattle.
3. To keep the area under cultivation.

The yields of different crops with the actual area grown and the calculated yield per acre are given in the statement attached.

An area of about 10 acres was placed at the disposal of the Economic Botanist for Plant Breeding and selection work. Out of this about 2 acres were under Paddy, and 8 acres under Kharif and Rabi Castor.

The Cotton Research Botanist was given about 5 acres for cotton work, out of which experimental cotton was grown on 3 acres and two acres were utilised for propagation.

All labour, implements, manures, etc., required by the above-mentioned Experts for carrying out their work were supplied by the Farm.

*Statement showing the Area and Yield of Miscellaneous Non-experimental Crops grown on the Farm during the year 1345-1346 F.*

Serial No.	Name of crop	AREA UNDER CULTIVATION		YIELDS—ACTUAL AS PER UNDER CULTIVATION			CALCULATED AVERAGE YIELDS PER ACRE		
		Acres	Ghun-tas	Green Fodder	Seed	Dry Fodder	Green Fodder	Seed	Dry Fodder
1	Bajra ..	6	..	..	3,489	10,916	..	573	1,819
2	Berseem ..	3	..	1,24,599	..	..	41,533	..	..
3	Batana ..	..	20	..	23	114	..	46	228
4	Castor ..	6	..	..	2,644	..	..	441	..
5	Cotton ..	3	..	..	378	..	..	126	..
6	Gram ..	12	..	..	8,250	5,830	..	689	486
7	Groundnuts ..	11	..	..	11,745	..	..	1,068	..
8	Jowar Fodder ..	18	..	..	1,354	57,900	..	75	3,217
9	Jowar Fodder Rabi	5	..	..	..	25,847	..	..	5,175
10	Jowar Grain ..	2	30	..	72	12,240	..	26	4,451
11	Linseed ..	1	10	..	651	..	..	521	..
12	Lucerne ..	1	10	57,678	..	..	46,214	..	..
13	Maize Fodder ..	4	30	20,681	..	..	4,278	..	..
14	Maize Grain ..	8	10	1,967	3,932	21,774	238	477	2,634
15	Moth ..	1	..	13,038	..	..	13,038	..	..
16	Mung ..	1	..	..	31	157	..	31	157
17	Oats ..	3	..	25,757	..	..	8,586	..	..
18	Paddy (Abi) ..	3	30	..	4,819	6,143	..	1,285	1,638
19	Paddy (Tabi) ..	3	30	..	3,536	4,170	..	943	1,112
20	Patwa ..	..	4	..	54	80	..	540	800
21	Rawan ..	1	..	7,532	200	..	7,532	200	..



*Statement showing the Area and Yield of Miscellaneous Non-experimental Crops grown on the Farm during the year 1345-1346 F.—(concl.)*

Serial No.	Name of crop	AREA UNDER CULTIVATION		YIELDS.—ACTUAL AS PER ACRE UNDER CULTIVATION			CALCULATED AVERAGE YIELDS PER ACRE		
		Acres	Ghuntas	Green Fodder	Seed	Dry Fodder	Green Fodder	Seed	Dry Fodder
22	Soank Green Fodder ..	9	..	15,982	..	..	1,776	..	..
23	Soank Grain ..	1	..	..	585	907	..	585	907
24	Soyabeans ..	1	..	..	337½	..	..	337½	..
25	Sugarcane (New crop) ..	3	20	1,86,127	..	..	46,614	..	..
26	Sugarcane (Ratoon) ..	1	20	46,153	..	..	30,768	..	..
27	Til (Sesamum) ..	2	..	..	311	..	..	156	..
28	Tur ..	10	10	..	5,505	11,170	..	537	1,089
29	Udid ..	1	..	..	17½	53	..	17½	55
30	Wheat ..	2	10	..	2,916	3,752	..	1,296	1,667

*General sugarcane.*

New crop.—3½ acres.

	lbs.	lbs.
Total cane harvested	.. 1,86,127	..
i. Sold for chewing	.. 1,178	} 22,977
ii. For chemical analysis ..	6,150	
iii. For seed ..	.. 15,649	
For preparing gur	.. ..	1,63,150

Ratoon crop.—1½ acres.

Total cane harvested	.. 46,153	..
i. Sold for chewing	.. 1,758	} 14,055
ii. For chemical analysis ..	2,934	
iii. For seed ..	.. 9,363	
For preparing gur ..	.. ..	32,098

## PERMANENT IMPROVEMENT.

*Levelling and Lay-out.*—Levelling of the Sugarcane Rotation Block was done with zeal as the crop was to come in the same block. About 12 acres of land which was partially levelled during last year was completely levelled during the year under review. Besides this fifteen areas of fresh land were taken up for levelling, out of which 5 acres in Sugarcane Block are nearing completion and ten acres of Canal area was partially levelled which will be completed next year. Proper drainage system of most of the blocks was attended to and improved. Minor improvements in plots, boundaries, roads and channels were done.

*Roads.*—Two roads in Sugarcane Rotation block and one boulevard which were laid out last year, were constructed during the year under review, out of which two are quite fit for use and one is still under completion. Portions of the Mall, Central and Paddy roads were filled with earth, and improved. Fresh roads in Kunta area, Tunga block and palm area were laid out and marked, which will be developed during the coming year. Bye-roads of smaller lengths were also attended to. The three old culverts on the Irsalgandi Channel were repaired.

*Buildings.*—No new building was constructed on the Farm during the year under review. The construction of the Inspection Bungalow which was taken up by the P. W. D., this year is nearing its completion and it is expected that it will be handed over in the coming year.

*Sheds.*—A new shed was erected in the Shed area near the sugarcane rotation block, where all the power cane crushers Hadi's furnaces were fixed for cane crushing and gur boiling purposes.

Another shed transferred from the Mahbubnagar Farm, was erected near the threshing yards, to be used as Museum of the Farm.

The old gur boiling shed was transferred from field No. 67 to field No. 69 and is now used as Implement shed of the Farm.

*Implements and Machinery.*—All the machines and implements were kept in working order during the year

under review. Various spares were purchased as required. Nearly whole of the old stock was overhauled and all the pumps, bullock Power Cane crushers, Chaff-cutters, etc., were repaired and kept in working order.

The following implements were transferred from the Mahbubnagar Farm.—

(1)	Avery Weighing Machine.	1
(2)	Grain Grinder	1
(3)	Bullock Gear Chaff-cutter	1 complete.
(4)	Wooden Cart.	1
(5)	Cole's Seed Drill.	1
(6)	Spring Balance.	1
(7)	Victory Ploughs.	3 with spares
(8)	Bins different sizes.	100
(9)	Lawn Mower.	1
(10)	Tin shed 40' × 20'	1
(11)	Tin shed 12' × 12'	1
(12)	Trenching Hoes No. 2	6
(13)	Drilling machine	1

5 B. H. P. Engine with pump, etc., (old) complete is transferred from Horticultural Section to the Farm through Boring Superintendent's Office.

The following is the list of the new purchased implements, etc., excluding spare parts.

(1)	Hadi Furnace Gur Boiling Set	2 complete.
(2)	Mc. Glashan Furnace 'Gur Boiling Set	2 complete.
(3)	Wooden Carts.	5
(4)	Winnower.	1
(5)	Blow Pump (Stove)	1 for engine
(6)	Iron Baskets	60
(7)	Iron Pots	10
(8)	Iron Chains	6
(9)	Scissors	1
(10)	Lanterns.	4
(11)	Hammer	1
(12)	Files.	12 different sizes.

3, three Chaff-cutters were received from Mas Bros., Benares, for trial.

The Farm Workshop, one Egyptain screw was sent to the Superintendent, Government Farm, Allahabad; one Hyder Trencher was manufactured for the Government Exhibition; and two models, one of McGlasson's, and the other of Hadi Furnace, were prepared for the Silver Jubilee Exhibition.

*Stock*.—One pair of Cattle was purchased from Government Cattle Breeding Farm, Himayatsagar. 10 pairs of Cattle (Mysore Breed, Amrit Mahal) were purchased locally. 5 bullocks and 2 buffaloes were transferred from Mahbubnagar Farm. In all 13 bullocks and 2 buffaloes were added to the Farm cattle.

1 bullock and one buffalo died in the Hospital during the year under report. 7 bullocks and 2 buffaloes died in the *Narsingy* Bazar owing to old age. The remaining cattle of the Farm were in good condition of health.

*Crops*.—Due to scanty rainfall during the Kharif season sufficient green stuff was available for ensilage.

*Compost Pits*.—20 compost pits were kept in constant use throughout the year to manufacture compost. About 100 loads of compost were obtained. (cart-load=800 lbs.) A quantity of about 50 cart-loads of ordinary farm manure was also prepared.

*Class*.—A Farmer-Class was started in 1344 F. for the training in practical agriculture and allied subjects to the members of the families of the cultivators connected with land who wish to take up agriculture as their profession. A two years syllabus was so arranged that the students of the class may come in touch with improved methods of practical agriculture so that they may be able to make general improvements in their farms on their return home.

During the year the Session commenced from the 1st of January 1345 F. (June 1936).

10 new students were admitted in the 1st year and continued their study throughout the year.

The original batch of eleven students that were promoted from the 1st year, continued their studies in the second year.

At the end of the year, in the month of Thir 1346 F. (May 1937), these eleven students appeared for their Final Examination. Out of these, two passed out in the 1st Division, obtaining more than 75 per cent. of marks, seven students passed in 2nd Division getting above 60 per cent. of the total number of marks and two students passed in 3rd Division scoring above 50 per cent. of the total number of marks.

Out of the twelve 1st year students, six passed in the 1st Division, and six in the 2nd Division.

The Deputy Director of Agriculture, Eastern Telangana Division, was kind enough to examine the students. I offer my heartfelt thanks to him.

The Examiner's remarks are.—

“These boys have been examined both in theory and practice. I am glad to say that I have found the students very well trained and imbued with the idea of progressing their agriculture”

The classes were finally closed for Summer Vacation during the month of Thir 1346 F.

*Forest Experimental Plantation.*—A strip of land about 14 acres in area bounded by the barbed wire fencing on the riverside and the old bund serving the purpose of high level road was transferred to the Forest Department last year and remained in their charge.

*Charge and Establishment.*—Mr. Mohomed Aquil Khan, remained in charge of the Farm as Superintendent throughout the year and carried out his duties with zeal and ability. During the year he availed of casual leave for 9 days and was out on Government work for 53 days.

Mr. Abdul Haq, Assistant Farm Superintendent was transferred to Mahbubnagar on 9th Mehir 1345 F. (15th August 1936) and after the close of that Farm, he was again transferred as Assistant Superintendent, Himayatsagar farm on 24th Ardebehist 1346 F. (28th March 1937). He availed of privilege leave for a month and half from 16th Khurdad 1346 F. till the end of Thir 1346 F.

Rao K. Javadekar acted in his place in addition duties as District Agricultural Officer,

—The Farm expenditure during the year d amounted to O. S. Rs. 33,003-11-3 and -11-3 The income of the year amounted ,159-6-6 and B. G. Rs. 2-0-0 which were ll in the Government Treasury.

(Sd.) A. MAJEED,

*Deputy Director of Agriculture,  
Western Telingana Division,  
Himayatsagar, Hyderabad-Dn.*

[*Statement.*

*Statement showing the results of 1st and 2nd year classes during the year 1345-1346 F.*

	NUMBER OF STUDENTS	
	1st Session	IIInd Session
1. Number of applications received for admission .. ..	41	..
2. Number of students admitted ..	12	11
3. Number of students who appeared for the Examination .. ..	..	11
4. Number of students who passed out successfully .. ..	..	11
5. Percentage of passes .. ..	..	Cent per cent
6. Number of students in the class at the end of the year .. ..	12	..
7. Total number of students who have successfully passed out of the class from the inauguration till the end of this year .. ..	..	11
8. Remarks :—	From the large number of applications that are being constantly received for admission into the classes, it is evident that the classes are becoming popular.	

Statement showing the Rainfall at the Government Main Agricultural Experimental Farm,  
Himayatsagar for the year 1845-1846 Fasli.

Date	Amer- dad	Shah- rewar	Mehir	Aban	Azur	Dia	Bah- mon	Isin- dar	Far- war- di	Ar le- tehist	Khur- dad	Thir
1	0.02	..	0.13	0.19	..	0.05	..	..	..	..	0.15	..
2	..	..	0.06	0.29	..	..	..	..	..	..	..	..
3	..	0.11	0.05	0.06	..	..	..	..	..	..	0.30	..
4	0.13	0.67	..	..	..	..	..	..	..	..	0.22	..
5	0.12	0.02	..	..	..	0.06	..	..	..	..	..	..
6	0.10	..	..	..	..	0.07	..	..	..	..	0.14	0.12
7	..	..	..	..	..	0.17	..	..	..	..	1.00	..
8	..	0.06	..	..	..	0.12	..	..	..	..	..	..
9	0.06	0.03	..	..	..	0.01	..	..	..	..	..	..
10	0.03	0.09	0.14	..	..	0.05	..	..	..	..	..	..
11	..	0.04	0.28	0.37	..	..	..	..	..	..	..	..
12	..	..	0.39	..	..	..	..	..	..	..	..	..
13	..	0.79	0.02	..	..	..	..	..	..	0.31	..	..
14	..	0.07	0.03	..	..	..	..	..	..	..	0.21	..
15	0.10	0.28	..	..	..	..	..	..	0.09	0.41	0.94	..
16	0.19	..	..	..	..	..	..	..	0.07	..	1.00	..
17	0.80	0.27	..	..	..	1.28	..	..	..	..	0.12	..
18	..	0.64	..	..	..	0.07	..	..	..	..	0.86	..
19	..	0.54	..	..	..	..	2.46	..	..	0.49	..	..
20	0.08	..	..	..	..	..	..	..	..	..	..	..
21	0.15	..	..	0.01	..	..	..	..	0.03	0.32	..	0.11
22	..	..	1.02	0.06	..	..	..	..	..	..	..	..
23	..	0.24	..	..	..	..	..	..	..	..	..	..
24	0.21	..	0.31	0.52	0.52	..	..	..	..	..	..	..
25	..	..	0.31	0.50	..	..	..	..	..	..	..	..
26	0.09	..	0.06	0.14	0.51	..	..	..	..	..	..	..
27	..	..	0.01	..	..	..	..	..	..	..	..	..
28	..	0.16	..	..	..	..	..	..	0.10	0.30	..	..
29	..	0.01	..	..	..	..	..	..	..	..	..	..
30	..	..	0.12	..	..	..	..	..	..	..	..	..
31	0.17	..	..	..	..	..	..	..	..	..	..	..
Total.	2.25	4.02	2.93	2.14	1.03	1.88	2.46	..	0.29	1.83	4.94	0.23

Grand total=24.00 inches.



List of Experiments to be tried on the Government Experimental Farm, Himayatsagar, for the year 1346-1347 F.

- (1) Standard Manurial Experiment.
- (2) Manurial Experiment with Paddy to find out the optimum Nitrogen-Phosphoric Acid Ratio.
- (3) Determination of Mohwa Refuse as Manure for Paddy.
- (4) Manurial Experiment with oil-cakes.
- (5) Manurial Experiment with Farm Yard Manure and Compost.
- (6) Paddy Rotation Experiment.
- (7) Comparison of Paddy Varieties.
- (8) „ Sugarcane Varieties.
- (9) „ Kharif Jowar Varieties.
- (10) „ Bajra Varieties.
- (11) „ Groundnut Varieties.
- (12) „ Arhar Varieties.
- (13) „ Tobacco Varieties.
- (14) „ Wheat Varieties.
- (15) „ Gram Varieties.
- (16) „ Rabi Jowar Varieties.
- (17) „ Linseed Varieties.
- (18) Plantation of Sugarcane on Flat Land.
- (19) Planting Time Test with California Dwarf Jowar.
- (20) Planting Time Test with Irrigated Ground-nuts in Rabi Season.

ANNUAL REPORT  
OF THE  
AGRICULTURAL EXPERIMENTAL FARM,  
SANGAREDDY,  
FOR THE YEAR 1346 F.

*Introduction.*—Until the year 1327 F. (1918) the present Farm area was under the charge of the Veterinary Department, and was used as grazing ground for the Stud horses. The Stud Farm having being transferred to Hingoli, this area was handed over to the Department of Agriculture. A lot of spade work had to be done to render the fields capable of being used for experimental work.

Proper agriculture experimental work was started on the farm in the year 1339 F. (1929) and the year under review is the seventh year of the experimental work.

*Situation.*—The farm is situated on the Potareddipalli road on the west of Sangareddy Town, at a distance 14 miles from Shankarpalli Station on H.E.H. the Nizam's Broad Gauge Railways.

*Object.*—This farm is maintained for carrying out the experimental work for the Telingana chalka soils to supplement the work being carried out on the Main Agricultural Experimental Farm at Himayatsagar.

*Soil.*—The major portion of the farm land consists of high-lying, well-drained chalka soils representative of the Telingana tract.

*Area.*—The total area of the farm consists of 78 acres as follows.—

Area	IRRIGATED ACRES		Unirrigated acres	Total acres
	Free flow	Lift		
Farm ..	9½	3½	52	65
Pasture ..	..	..	11	11
Home-stead ..	..	..	2	2

*Season.*—Total rainfall during the year amounted to 32.89" which is lower than that of the previous year. The distribution, also was uneven which had its bad effect on the growth of the crops.

In rabi season there was a long break in rains towards the beginning and during the maturity of the crops which proved detrimental to normal growth. In addition to this when the rabi crops were ready for harvest there were heavy downpours of rain accompanied by stormy wind which spoiled the crops badly.

The Summer and Winter temperatures were quite seasonal and there was nothing extraordinary about the seasonal effects.

*Crop Experiments.*—The following pages will show the details of the crop experiments conducted during the year under review.

*Experiment No. 1.—Manurial Experiment on Paddy with Nicifos.*

*Object.*—To find out if Nicifos is more profitable a fertilizer for paddy than a combination of Ammonium Sulphate and Superphosphate.

*Soil.*—Typical paddy soil.

*Treatment.*—The following different treatments were given to the respective plots.—

(1) Farm Yard Manure at 20 lbs. Nitrogen per acre.

(2) Farm Yard Manure at 20 lbs. Nitrogen per acre plus Nicifos (18/22) at 20 lbs. Nitrogen per acre.

(3) Farm Yard Manure at 20 lbs. Nitrogen per acre plus Ammonium Sulphate at 20 lbs. Nitrogen per acre plus Superphosphate at 20 lbs. Phosphoric acid per acre.

*Plotting.*—18 plots each measuring 66'  $\times$  22' or 1/30 acre, with buffer plots measuring 66'  $\times$  6' or 1/110th acre each between such cropped plots are permanently laid out.

## ABI CULTIVATION.

*Preparatory Cultivation.*—Three ploughings with Meston plough were given on the 19th Thir and 9th, and 16th Shahrewar 1345 F. (24th May and 15th and 22nd July 1936) respectively. Jamboo was worked on the 15th and 31st Amerdad 1345 F. 20th June and 6th July 1936).

*Manuring.*—The Manures were applied on the dates given below to their respective plots.—

Name of manure	Quantity per plot	Date
Farm Yard (to all plots)	full quantity	14th Amerdad 1345 F. (19th June 1936)
Nicifos	do	8th Mehir 1344 F. (15th August 1935)
Superphosphate	do	23rd Shahrewar 1345 F. (29th July 1936)
Ammonium Sulphate (1st dose)	1st half.	8th Mehir 1345 F. (14th August 1936)
Ammonium Sulphate (2nd dose)	2nd half.	3rd Aban 1345 F. (8th September 1936)

*Transplanting.*—Single seedlings of paddy No. 504 were transplanted in all the experimental plots at a distance of about 6"  $\times$  4" on the 23rd Shahrewar 1345 F. (29th July 1936).

*Irrigation.*—The plots were irrigated every alternate day as required.

*Growth.*—The crop in all the plots grew fairly well.

The following were the average heights, etc.—

Treatment	Height	No. of tillers	Date of flowering
1. Farm Yard Manure ..	3'	3.56	14th Aban 1345 F. (19th September 1936)
2. Nicifos ..	2' 6"	3.53	16th Aban 1345 F. (21st September 1936)
3. Ammonium Sulphate + Superphosphate ..	3'	3.21	19th Aban 1345 F. (24th September 1936)

*Weeding.*—No weeding was done as the fields were free of weeds.

*Pests and Diseases.*—There was a slight attack of Hispa but the crop was badly damaged by crabs.

*Harvesting.*—The crop was harvested on 4th Dai 1346 F. (8th November 1936).

*Note.*—As the crop was badly damaged due to the scarcity of water no results could be given for Tabi season.

*Yields.*—The following lay-out plan shows the distribution of manurial treatment on the field as well as the actual yields in lbs. per plot in Abi & Tabi seasons of 1345—1346 F.

*Paddy Manurial Test Abi 1345—1346 F.*

C	B	A	C	B	A	C	B	A
72	72	76	74	83	47	80	83	53
71	80	84	72	93	56	78	91	59
C	B	A	C	B	A	C	B	A
64	83	49	74	83	49	88	95	56
64	91	52	72	92	55	87	104	62

Six replication. Dimensions of each plot— $22 \times 66 = 1/30$  acre.  
Length—North—South, Bread—East—West.

#### SUMMARY OF RESULTS.

	Mean yields in pounds			General mean	Standard error of treatment mean	Critical difference
	A	B	C			
Per acre ..	1,650	2,495	2,260	2,135	55.5	166.5
Percentage on general mean ..	22.7	+ 16.9	+ 5.8	..	..	..
Percentage on control	..	+ 51.2	+ 37	..	..	..

#### *Conclusion.*

$B > C > A$

A—Farm Yard Manure.

B—Farm Yard Manure  $\times$  Nicifos.

C—Farm Yard Manure + Sulphate of Ammonia  $\times$  Superphosphate.

*Experiment No. 2.—Rotation Experiment in  
Chalka Soil.*

*Object.*—To demonstrate the value of the proper rotation of crops.

The Experiment was started in the year 1340-1341 F. (1931-32) with two rotations, viz., (a) four years' rotation, and (b) Three years' rotation. A two years' rotation was introduced in the experiment during the year 1342-1343 F. (1933-1934).

(a) *Four years' Rotation.*

The experiment consists of four crops rotated as follows.—

(1) Groundnut. (2) Jowar. (3) Tur. (4) Castor.

The Jowar crop only to be manured.

*Preparatory cultivation.*—The field was ploughed by Victory Plough on the 19th Thir 1345 F. (24th May 1936) and Disc Harrow was worked on the 28th Ardebehist 1345 F. (1st April 1936) and was bakhared on 21st Kurdad and 1st and 10th of Amerdad 1345 F. (25th April and 6th and 15th June 1936).

*Plotting.*—Field was divided into 16th plots with an area of  $1/10$ th acre each, measuring  $72' \times 60\frac{1}{2}'$ .

*Manuring.*—Manure (compost) was applied only to Jowar plots at the rate of 600 lbs. per plot on 16th Thir 1345 F. 21st May 1936 and was well mixed with cultivator.

*Sowings.*—The crops were arranged as shown in the table given below.—

West		North	
Jowar	Arhar	Castor	Groundnut
Groundnut	Castor	Arhar	Jowar
Arhar	Jowar	Groundnut	Castor
Castor	Groundnut	Jowar	Athar

The crops were sown on 19th Amerdad 1345 F. (24th June 1936). The distances at which each crop was sown were as follows.—

Crop			Distance between rows	Distance between plants	Remarks
Jowar (Local)	..	..	18"	12"	
Castor (E.B's green)	..	..	36"	18"	
Groundnut (Kanki 17)	..	..	12"	9"	
Tur (Local)	..	..	36"	18"	

Jowar was sown with seed drill, while all other crops were hand dibbled.

*Interculture.*—All the plots were hand weeded three times on 14th, 31st Shahrewar and 29th Aban 1345 F. (20th July, 6th August and 4th October 1936), and norcrossed twice on 29th Amerdad and 14th Shahrewar 1345 F. (4th and 20th July 1936). Besides this five interculturations were given on 6th Mehir, 1st, 5th and 22nd Aban 1345 F. and 21st Azur 1346 F. (12th August 6th, 10th, and 27th September and 26th October 1936).

*Rainfall and Irrigation.*—No irrigation was given, but the crops received the following rainfall.—

Groundnut.	..	22. 80 inches
Jowar	..	23. 30 „
Tur.	..	24. 81 „
Castor.	..	23. 30 „

*Germination and Growth.*—Germination was good in all the plots and growth normal.

*Diseases and Pests.*—There was an attack of Red Hairy Caterpillar and Castor Semilooper on Castor and also by Capsule Borer.

*Harvesting.*—The harvesting dates of the crops were as follows.—

Groundnut 18th Azur 1346 F. (23rd October 1936).

Jowar.—7th Dai 1346 F. (11th November 1936).

Tur.—28th Bahmon 1346 F. (31st December 1936).

Castor.—29th Azur to 13th Ardebehist 1346 F.

(3rd November 1936 to 17th March 1937).

	SERIES A.		SERIES B.		SERIES C.		SERIES D.		AVERAGE											
	PER PLOT	PER ACRE	PER PLOT	PER ACRE	PER PLOT	PER ACRE	PER PLOT	PER ACRE	PER PLOT	PER ACRE										
	Grain	St- raw	Grain	St- raw	Grain	St- raw	Grain	St- raw	Grain	St- raw										
owar (Local yellow) ..	62	400	620	4,600	52	452	520	4,520	16	506	160	5,000	80	502	800	5,020	52.5	481.5	525	4,815
roundnut (Kanki 17) ..	158	0	1,580	0	228	0	2,280	0	180	0	1,800	0	244	0	2,440	0	202.5	0	2,025	0
ur (Local) ..	86	0	800	0	80	0	800	0	70	0	700	0	96	0	960	0	83	0	830	0
astor (E.B.'s selection) ..	26.75	0	207.5	0	58.5	0	585	0	24.25	0	242.5	0	33	0	330	0	35.025	0	356.25	0



*(b) Three years' Rotation.*

The rotation consists of the following three crops.—

(1) Groundnut, (2) Jowar, (3) Castor.

Jowar crop only to be manured.

*Preparatory Cultivation.*—The field was ploughed on 19th Thir 1345 F. (24th May 1936) and Disc harrow was worked on 28th Ardibehist 1345 F. (1st April 1936) and harrowed with bakhar on 21st Khurdad, 1st and 10th Amerdad 1345 F. (25th April, 6th June and 15th June 1936) and one cultivator was run on 26th Thir 1345 F. (31st May 1936).

*Plotting.*—Field was divided into 9 plots each measuring  $86\frac{1}{4} \times 50\frac{1}{2}$  or  $1/10$ th acre.

*Manuring.*—450 lbs. of compost per plot was applied to the Jowar plots only on 16th Thir 1345 F. (21st May 1936) and well mixed with cultivator.

*Sowing.*—Crops were arranged as shown in the plan given below.—

WEST		NORTH	
CASTOR	JOWAR	GROUNDNUT	
GROUNDNUT	CASTOR	JOWAR	
JOWAR	GROUNDNUT	CASTOR	

The crops were sown on 18th Amerdad 1345 F. (23rd June 1936). The distances at which each crop was sown were as follows.—

Crop	Distance between rows.		Distance between plants.	
Jowar (Local)	..	18"	..	12"
Castor (E. B. 's Green)	..	36"	..	18"
Groundnut (Kanki 17)	..	12"	..	9"

-All the plots were hand weeded thrice ar, 1st Mehir and 19th Aban 1345 F. August, and 24th September 1936) sed twice on 29th Amerdad and 14th F. (4th July and 20th July 1936). It tured on 6th Mehir 1st, 5th and 22nd l 21st Azur 1346 F. (12th August, 6th ptember and 26th October 1936).

*d Rainfall.*—No irrigation was given eived the following rainfall.—

nut	..	..	22.80 inches.
	..	..	23.30 „
	..	..	23.30 „

*and Growth.*—Germination was good

*Pests.*—A mild attack of Red Hairy astor and Tur and that of Castor Semi- , was noticed.

—Groundnut was harvested on 18th d October 1936). Jowar was harvested ; F. (11th November 1936). Castor was en 29th Azur 1346 F. and 13th Ardibe- 3rd November 1936 and 17th March

The yields obtained are given in the fol- it.



*s' Rotation.*

consists of the following two crops.—  
(2) Castor.

to be manured

*tivation.*—The field was ploughed on 24th May 1936) and cultivator was used on 1345 F. (31st May 1936) and on 11th Amerdad 1345 F. (6th June 1936). One discing was done on 1345 F. )31st March

was divided into 8 plots each measuring 1/10th acre.

Manure (compost) was applied on 16th May 1936) at the rate of 300 lbs. per acre with cultivator.

Crops were sown on 18th Amerdad 1936). The distances at which each was sown are as follows.—

	Distance between rows	Distance between plants	Methods of sowing
..	18"	12"	Seed drill.
..	36"	18"	Dibbled

The plots were hand weeded on 1st and 30th Aban 1345 F. (1st August and 5th September 1936) and on 11th Shahrewar 1345 F. (20th July 1936). Cultivations were given on 6th Mehri, 1345 F. (12th August, 9th and 27th

*rainfall.*—No irrigation was given but the following rainfall.—

..	..	23.30 inches.
..	..	23.30 „

*Germination and Growth.*—Germination in all the plots was good.

*Pests and Diseases.*—There was an attack of Red Hairy caterpillar and Semilooper on Castor. The attack was mild.

*Harvesting.*—Jowar was harvested on 7th Dai 1346 F. (11th November 1936). Castor was harvested from 29th Azur to 12th Ardibehist 1346 F. (3rd November 1936 to 16th March 1937).

*Outturn.*—Yields obtained are given in the following statement. These were rather poor.

*Outturn statement in lbs. of two years' rotation experiment 1345-1346 F.*

	SERIES A			SERIES B			SERIES C			SERIES D			AVERAGE		
	PER PLOT		PER ACRE	PER PLOT		PER ACRE	PER PLOT		PER ACRE	PER PLOT		PER ACRE	PER PLOT		PER ACRE
	Grain	St- row	Straw	Grain	St- row	Grain	Grain	St- row	Straw	Grain	St- row	Grain-Straw in	Grain	St- row	Grain
Jowar (Local yellow) ..	16 212	160	2,120	16 120	160	1,200	34 224	340	2,240	40 102	400	1,020	26.5	187 205	1,870
Castor (E.B's. section) ..	25.75	0	157.5	0 65.25	0	652.5	43.75	0	437.5	55.5	0	505	0 48.5625	0 485.025	0

*Experiment No. 3.—Comparison of Paddy varieties.*

*Object.*—To find out the most profitable variety for Telingana.

*Varieties.*—The following varieties were tried.

- (1) Texinal.
- (2) Paddy No. 263
- (3) Paddy No. 539
- (4) Paddy No. 504
- (5) Paddy No. 541
- (6) Pusa T. 18
- (7) Paddy No. 80
- (8) Nizamgoad.

This experiment was started last year.

*Plotting.*—The field was divided into 48 plots each measuring  $60\frac{1}{2}' \times 9' = 1/80^{\text{th}}$  acre. 8 varieties were replicated six times.

## ABI CULTIVATION.

*Preparatory cultivation.*—The field was ploughed with Meston Plough thrice on 23rd Thir 7th Shahrewar and 17th Shahrewar 1345 F. (28th May, 13th and 23rd July 1936) and harrowed once on 21st Amerdad 1345 F. (26th June 1936).

*Manuring.*—800 lbs. of compost was applied to each plot on 14th Amerdad 1345 F. (19th June 1936).

*Transplanting.*—The varieties were transplanted  $6'' \times 4''$  on 24th Shahrewar 1345 F. (30th July 1936).

*Interculture.*—As there were on weeds no operation was done.

*Irrigation.*—Irrigation was given every alternate day and as required.

*Germination and Growth.*—The Varieties grew fairly well.

The following were the average heights, etc.—

Variety	Height	No. of tillers	Date of flowering			
Texinal ..	2'6"	4.0	16 th	Aban 1345 F.	(21st	
Paddy No. 504 ..	2'8"	3.4	18th	do	September 1936	
Paddy No. 263 ..	2'7"	4.2	19th	do	(23rd	do
Paddy No. 541 ..	2'6"	3.9	23rd	do	(24th	do
Paddy No. 539 ..	2'7"	4.6	22nd	do	(28th	do
Pusa T. 18 ..	2'6"	3.9	20th	do	(27th	do
Paddy No. 80 ..	2'6"	4.0	28th	do	(25th	do
Nizamgoad ..	2'6"	4.1	3rd	Azur 1346 F.	(8th	do
					October 1936)	

*Diseases and pests.*—There was a slight attack of hispa and borer and field crab attack was severe.

*Harvesting.*—The varieties were harvested on.—

Pusa T. 18 and Paddy No. 504 .. 2nd Dai  
1346 F. (6th November 1936).

Paddy No. 80, Nizamgoad,

Paddy No. 539 and Paddy No. 541 .. 18th do  
(22nd do)

Paddy No. 263 and Texinal .. 6th do  
(10th do)

*Outturn.*—The yields obtained are given in the statement attached.

Note.—As the crop was badly damaged due to scarcity of water no results could be given for Tabi cultivation.



## Paddy Varietal Test ( Abi 1345-1346 Fasli).

A	B	C	D	E	F	G	H	B	D	H	E	C	F	A	G	B	F	G	E	D	C	A	H
27	29	25	28	28	23	28	29	22	31	25	34	24	22	34	26	27	23	23	32	24	22	27	22
24	28	28	27	26	24	27	27	22	30	25	33	27	21	31	26	25	23	24	30	25	23	24	23
G	B	D	F	H	E	A	C	F	H	B	D	E	C	A	G	D	H	F	C	B	A	E	G
27	20	24	22	27	26	29	24	28	29	28	29	34	30	31	31	28	28	24	26	28	32	30	27
27	22	24	23	27	25	26	24	26	28	28	27	31	30	28	29	27	27	22	28	26	30	28	25

Six replications.

Size of each plot =  $60\frac{1}{2}' \times 9' = 1/80$  acres.

## SUMMARY OF RESULTS.

	MEAN YIELD IN POUNDS.								General mean	Stand- ard treat- ment mean	Critical differ- ence	
	A	B	C	D	E	F	G	H				
Per acre	..	2,400	2,050	2,013	2,187	2,450	1,890	2,160	2,180	2,160	49.6	148.8
Percentage on general mean	..	+ 11.03	- 5.01	- 6.85	+ 1.15	+ 13.5	- 12.41	..	- 1.31	..	..	..
Percentage on control	..	+ 19.20	+ 1.91	..	+ 8.60	+ 21.84	- 5.95	+ 7.27	+ 5.95	..	..	..

## Conclusion.

E=A &gt; D &gt; C=F; D=G=H=B.

A=Paddy 263, B=Paddy 539, C=Texenal, D=Nizamgoad, E=Paddy No. 80, F=Pusa T. 18, G=Paddy 541, H=Paddy 504.

*Experiment No. 4.—Comparison of Kharif Jowar Varieties.*

*Object.*—To find out the most profitable variety for Telingana.

*Varieties.*—The following varieties were tried.—

- (1) Cawnpore Dodania.
- (2) Local Yellow.
- (3) Pucha Junnal.
- (4) Local White.
- (5) Kodaldani.
- (6) Ramkhel.
- (7) Illaspuri.
- (8) Aishpuri.

*Preparatory Cultivation.*—Disc. Harrow was worked on 4th Farwardi 1345 F. (6th February 1936) and followed by two harrowings on 23rd Khurdad and 18th Thir 1345 F. (27th April and 23rd May 1936). The field was ploughed on 28th Thir 1345 F. (2nd June 1936) with Victory Plough followed by two harrowings on 31st Thir and 11th Amerdad 1345 F. (5th and 6th June 1936). and Planet Junior Cultivator was worked twice on 23rd Thir and 18th Amerdad 1345 F. (28th May and 23rd June 1936).

*Manuring.*—The field was manured at the rate of 6,000 lbs. compost per acre on 14th Thir 1345 F. (19th May 1936) and well mixed with cultivator.

*Plotting.*—48 plots each measuring  $73\frac{1}{3}' \times 13\frac{1}{2}' = 1/44$  acre were made. The varieties were replicated 6 times.

*Sowing.*—The varieties were sown by seed drill on 19th Amerdad 1345 F. (24th June 1936) at a distance of  $1\frac{1}{2}'$  apart in rows and thinned on 11th Shahrewar 1345 F. (17th July 1936) to leave a space of 9" between plants.

*Interculture.*—Hand weeding was done between 2nd Mehir and 6th Mehir 1345 F. (8th August and 12th August 1936) and norcrossed on 16th Shahrewar 1345 F. (22nd July 1936) Two interculturings were

done on 6th Mehir and 4th Aban 1345 F. (12th August and 9th September 1936).

*Germination and Growth.*—The germination was good in all varieties.

The date of flowering height of each variety was as follows.—

<i>Variety</i>	<i>Height</i>	<i>Date of flowering</i>
(1) Cawnpore Dodania	6' 10"	8th Aban 1345 F. 13th September 1936.
(2) Local Yellow.	7' 2"	12th do (17th do)
(3) Local White	5' 10"	9th do (14th do)
(4) Ramkhel.	7' 7"	21st do (26th do)
(5) Illaspuri.	7' 10"	21st do (26th do)
(6) Aispuri.	5' 6"	19th do (24th do)
(7) Pucha Jonnul.	6' 9"	12th do (17th do)
(8) Kodaldani.	7' 5"	15th do (20th do)

*Diseases and Pests.*— Nothing.

*Irrigation and Rainfall.*—No Irrigation was given but the varieties received 27. 11 inches of rainfall.

*Harvesting.*—The varieties were harvested on the following dates.—

<i>Variety.</i>	<i>Date</i>
Local Yellow, Pucha Jonnul, and Cawnpore Dodania.	
11th Dai 1345 F.	(15th November 1936).
Illaspuri, Kodaldani and Local White.	
14th Dai 1346 F.	(18th November 1936).
Ramkhel and Aishpuri.	
15th Dai 1346 F.	(17th November 1936).

Kharif Jowar Varietal Test 1945-1946 *Pastu.*

	A	B	C	D	E	F	G	H	B	D	A	E	G	C	F	F	H	C	F	D	B	G	E	H	A
Grain	8.5	8.25	7.5	4.5	2.25	5	2.5	3	3.25	2.5	3.25	5.25	9.75	5.5	1.25		9.25	6.5	10.25	8	11.5	11	20.75	24.25	9.75
Fodder	81	51	80	180	38	216	111	32	40	120	69	46	88	41	135		66	38	240	182	51	150	169	85	59
	G	F	C	B	H	A	E	D	B	C	F	G	A	E	H		D	A	G	F	H	C	D	B	E
Grain	42	0.5	2	1.5	2	3.0	4.75	0.5	7.4	12.25	1	9.0	13.75	11.25	10		9.25	4.5	3	4.5	9.5	6.5	1	3.25	9
Fodder	114	80	58	41	34	68	33	90	54	66	156	92	80	57	66		132	68	95	160	70	69	121	56	38

Six replications.

Dimension of plot =  $73 \frac{1}{3} \times 131 \frac{1}{4}$  = 1/44 acre.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.												General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E	F	G	H							
Per acre	313.5	255	205	189	390.5	165	271	425					288	60.72	182.16
Percentage on general mean	+ 8.85	- 11.52	+ 2.46	- 34.4	+ 35.6	- 42.7	- 5.8	+ 47.67					..	..	..
Percentage on control	..	- 18.72	- 5.87	- 39.77	+ 24.56	- 47.37	- 13.46	+ 35.66					..	..	..

## Conclusion.

H : E &gt; D = F ; A = C = G = B.

A = Local Yellow, B = Local White, C = Poch Jonnul, D = Ramkhet, E = Kodaldani, F = Illasuri, G = Aishpuri, H = Cawnpore Dodania.

*Experiment No. 5.—Comparison of Bajra Varieties.*

*Object.*—To find out the most profitable variety for Telengana.

*Varieties.*—The following varieties were tried.—

- (1) Local.
- (2) Akola 32 C
- (3) Akola 14 B.
- (4) Kumboo.
- (5) Behar.
- (6) Cawnpore Awne.
- (7) Akola (Main Farm).
- (8) Jamnagar African.

*Preparatory Tillage.*—Ploughing was done on 19th Azur 1345 F. (25th October 1935). Harrowings were done on 23rd Khurdad, 18th Thir, 9th Amerdad 1345 F. (27th April, 23rd May, 14th June 1936). Planet Junior Cultivator was worked on 18th Amerdad 1345 F. (23rd June 1936).

*Manure.*—No Manure was applied

*Plotting.*—48 plots of 121'  $\times$  6' each with an area of 1.60th acre were made. The varieties were replicated 6 times.

*Sowing.*—The varieties were sown with seed drill on 6th Shahrewar 1345 F. (12th July 1936), 1½ apart between rows and thinned to leave a space of 9" between plants on 6th Mehri 1345 F. (12th August 1936).

*Interculture.*—One hand weeding on 2nd Mehri 1345 F. (8th August 1936) and 3 mulchings were done by norcross on 16th Shahrewar 1345 F., 20th Shahrewar and 13th Mehri 1345 F. (22nd, 26th July and 19th August 1936). Two interculturalures were given on 29th Mehri and 4th Aban 1345 F. (4th September and 9th September 1936).

*Germination and Growth.*—Germination was good in all the plots. The dates of flowering and the average

heights of each variety were as follows.—

<i>Variety</i>	<i>Height</i>	<i>Date of flowering.</i>
Behar.	3'	19th Mehir 1345 F. (25th August 1936).
Local.	4' 6"	2nd Aban 1345 F. (7th September 1936).
Gawnpore Awned.	4' 2"	27th Mehir 1345 F. (2nd September 1936).
Akola (Main Farm).	4'	30th Mehir 1345 F. (5th September 1936).
Akola 14-B.	4' 6"	30th Mehir 1345 F. (5th September 1936).
Akola 32-C.	4' 6"	1st Aban 1345 F. (6th September 1936).
Kumboo.	4' 3"	5th Aban 1345 F. (10th September 1936).
Jamnagar African.	4'	4th Aban 1345 F. (9th September 1936).

*Irrigation.*—No irrigation was given but the varieties received 17. 92 inches of rainfall.

*Diseases and Pests.*—Nothing noteworthy.

*Harvesting.*—the varieties were harvested on the following dates

<i>Varieties.</i>	<i>Date of harvest.</i>
Behar.	7th Dai 1346 F. (11th November 1936).
Cawnpore and Akola (Farm).	11th Dai 1346 F. (15th November 1936).
Local and Jamnagar African.	12th Dai 1346 F. (16th November 1936).
Kamboo, Akola 14-B, and Akola 32-C.	13th Dai 1346 F.

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*Outturn.*—The yields are tabulated in the attached statement.

Bajra Varietal Test 1345-1346 Fasi.

	A	B	D	G	C	H	E	F	B	A	G	F	E	D	C	H	G	F	E	D	C	B	A	H
Grain	2.75	3.75	5.5	8	2.25	3	7	4.5	5.5	6.75	6	8.75	7.25	5.5	7.75	8.5	9	10.5	9.75	8.5	6	11.5	8.5	8.5
Foeder	11	20	9	15	14	14	16	11	21	18	17	16	17	12	21	24	22	20	21	13	24	28	22	22
	G	C	H	B	D	A	E	F	A	G	E	D	F	B	C	H	E	D	B	H	F	G	C	A
Grain	5.75	4.75	3.5	7.5	6	7	6.25	10	6.75	6.25	6.25	6.25	7	6.5	4	5.5	6	6	2.75	2.5	8.5	6.25	4.25	6.75
Fodder	20	21	24	21	11	18	17	16	21	20	17	13	18	25	26	21	16	12	27	28	20	20	25	23

Six replications.

Dimensions of each plot = 121' x 6' = 1/60th acre.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN POUNDS										General mean	Standard error of treatment mean	Critical difference
									H				
	A	B	C	D	E	F	G						
Per acre	385	375	200	378	425	443	413	353	382.5	36.6	100.8		
Percentage on general mean	..	..	..	..	..	..	..	..	..	..	..		
Percentage on control	..	..	..	..	..	..	..	..	..	..	..		

## Conclusions.

F = E = G &gt; C; A = D = B = H = C.

A = Akola (Farm), B = Akola 14 B, C = Akola 32 C, D = Behar, E = Cawnpore Awmed, F = African Bajra, G = Kamboo, H = Local

*Experiment No. 6.—Comparison of Groundnut Varieties.*

*Object.*—To find out the most profitable variety for Telingana.

*Varieties.*—The following varieties were tried.—

- (1) Kanki 17.
- (2) Spanish No. 5
- (3) Hebbal No. 1
- (4) Spanish No. 9
- (5) Madagaskar.
- (6) Small Japan.
- (7) Bhadegaon.

*Preparatory Cultivation.*—Ploughing was done on 20th Thir 1345 F. (25th May 1936). Three harrowings were done on 1st Isfandar, 20th Khurdad and 12th Amerdad 1345 F. (4th January, 24th April and 17th June 1936). Cultivator was worked on 26th Thir 1345 F. (31st May 1936).

*Manuring.*—No Manure was applied.

*Plotting.*—42 plots of  $60\frac{1}{2}' \times 15'$  each with an area of 1.48 acre were prepared and the varieties were replicated six times.

*Sowing.*—All the varieties were dibbled  $12'' \times 9''$  on 17th Amerdad 1345 F. (22nd June 1936).

*Interculture.*—Two hand weedings were done on 6th and 26th Shahrewar 1345 F. (12th July and 1st August 1936) and norcross was run of and on as necessary to keep the soil loose.

*Irrigation and Rainfall.*—The varieties received 21.39" of rainfall during their period of growth. No irrigation was given.

*Germination and Growth.*—Germination was good. The dates of flowering of different varieties are given below.—

Small Japan

Spanish No. 9

Spanish No. 5

Bhadegaon

11th Shahrewar 1345 F.

(17th July 1936).



Madegaskar	13th Shahrewar 1345 F.
Habbal No. 1	(19th July 1936).
Kanki No. 17	

*Diseases and Pests.*—All the varieties were affected by Tikka disease.

*Harvesting.*—All the varieties were harvested on 18th and 19th Azur 1346 F. (23rd and 24th October 1936).

*Outturn.*—Yield of pods in lbs. are given in the following statement.

[Statement.

## Groundnut Varietal Trial (1345-1346 Fasil).

	A	B	C	D	E	F	G	D	E	G	B	F	A	C	G	F	E	D	C	B	A
Pods ..	54	72	72	70	36	54	60	70	40	70	74	66	74	66	74	76	46	70	74	74	72
	C	E	G	D	F	A	B	D	G	F	C	A	B	E	G	B	A	C	E	D	F
Pods ..	38	41	60	40	50	56	58	35	30	34	40	44	34	30	36	46	44	38	24	50	30

Six replications.

Dimensions of plot =  $60\frac{1}{2}' \times 15' = 1/48$  acre.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN lbs.							General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E	F	G			
Per acre ..	2,750	2,860	2,620	2,680	1,728	2,176	2,640	2,536	139.2	417.6
Percentage on general mean	+ 8.4	+ 12.8	+ 3.3	+ 5.6	- 31.9	+ 2.3	+ 4.1	..	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..

## Conclusion.

B=A=D &gt; G &gt; C &gt; F &gt; E.

A=Bhadrangaon, B=Hebbal No. 1, C=Kanki 17, D=Madagaskar (erect), E=Small Japan, F=Spanish No. 5,  
G=Spanish No. 9.

*Experiment No. 7.—Comparison of Arhar Varieties.*

*Object.*—To find out the most profitable variety.

*Varieties.*—The following varieties were tried.—

- (1) Pusa A. 2
- (2) Pusa T. G.
- (3) Pusa E.
- (4) Pusa 80.
- (5) Nagpur 3.
- (6) Local.
- (7) Nizam Tur.
- (8) Cawnpore.
- (9) Poona Red.
- (10) Coimbatore Red.

*Preparatory Cultivation.*—Three discings were made on 4th Farwardi, 29th Ardibehist, and 12th Amerdad 1345 F. (6th February, 2nd April and 17th June 1936). Two ploughings were given on 28th Ardibehist and 18th Thir 1345 F. (1st April and 23rd May 1936). Three harrowings were given on 22nd Khurdad, 23rd Thir and 1st Amerdad 1345 F. (26th April, 28th May and 6th June 1936).

*Manuring.*—No manure was applied.

*Plotting.*—60 plots each measuring 88'  $\times$  15' of 1/33 acre were made. The varieties were replicated six times.

*Sowing.*—All the varieties were dibbled at a distance of 36"  $\times$  18" on 20th Amerdad 1345 F. (25th June 1936).

*Interculture.*—Four hand weedings on 2nd, 18th and 28th Shahrewar 1345 F. (8th, 24th July and 3rd August 1936) and on 20th Aban 1345 F. (25th September 1936, were done.

*Irrigation and Rainfall.*—No irrigation was given but the crop received 24.76" of rainfall.

*Germination and Growth.*—Germination in all the varieties was good. Different varieties flowered on the following dates.—

<i>Variety</i>	<i>Date of Flowering.</i>
(1) Pusa E.	23rd Aban 1345 F. (28th September 1936).
(2) Coimbatore Red.	23rd Aban 1345 F. (28th September 1936)
(3) Poona Red.	1st Azur 1346 F. (6th October 1936).
(4) Local.	6th Azur 1346 F. (11th October 1936).
(5) Nizam Tur.	12th Azur 1346 F. (17th October 1936).
(6) Cawnpore.	20th Azur 1346 F. (25th October 1936).
(7) Nagpur No. 3.	23rd Azur 1346 F. (28th October 1936).
(8) Pusa A-2	28th Azur 1346 F. (2nd November 1936).
(9) Pusa 80	18th Dai 1346 F. (5th November 1936).
(10) Pusa T. G.	2nd Dai 1346 F. (6th November 1936).

*Harvesting.*—The varieties were harvested on the following dates.—

Pusa E, Coimbatore Red.	29th Dai 1346 F. (3rd December 1936).
Local Red, Poona Red.	17th Bahman 1346 F. (20th December 1936).
Nizam Tur.	2nd Isfandar 1346 F. (4th January 1937).
Cawnpore Pusa 80.	12th Ardibehist 1346 F. (16th March 1937).
Nagpur 3. Pusa A-2.	17th Ardibehist 1346 F. (21st March 1937).
Pusa T. G.	18th Ardibehist 1346 F. (22nd March 1937).

*Outturn.*—The yields are given in the following statement.







*Experiment No. 8.—comparison of Kharif Cotton Varieties.*

*Object.*—To investigate the behaviour of cotton on rainfed chalka soils and to find out the most profitable variety for Telingana.

*Varieties.*—The following varieties were tried.—

- (1) Gaorani No. 4
- (2) Gaorani No. 6
- (3) Gaorani No. 9
- (4) Gaorani No. 12
- (5) Gaorani No 58 E.

*Preparatory cultivation.*—Disc. harrowing was given on 27th Ardibehist 1345 F. (31st March 1936) followed by ploughing on 20th Thir 1345 F. 25th May 1936). Besides these four harrowings were given on 19th Khurdad, 27th Thir, 4th and 18th Amerdad 1345 F. (23rd April, 1st, 9th and 23 June 1936).

*Manuring.*—No manure was given.

*Plotting.*—30 plots of 10' x 132' each or 1/33 acre were made and the varieties were replicated six times.

*Sowing.*—The varieties were dibbled on 20th Amerdad 1345 F. (25th June 1936), 2' × 1½' apart.

*Interculture.*—Four hand weedings on 8th Shahrewar, 19th Shahrewar, 23rd Mehri 1345 F. and 13th Azar 1346 F. (14th, and 25th July, 29th August and 18th October 1936). Six interculturings were done on 6th, 14th and 31st Mehri 4th, 22nd, and 29th Aban 1345 F. (12th, 20th August, 5th, 9th, 27th, September, and 4th October 1936). Four mulchings were done on 25th, Amerdad, 1st, Shahrewar, 8th Shahrewar and 20th Shahrewar 1345 F. (30th June, 7th, 14th, and 26th July 1936).

*Irrigation.*—No irrigation was given. The varieties received the rainfall of 23. 69 inches.

*Germination and growth.*—Germination was good. Gaps were filled on 30th Amerdad 1345 F. (5th July 1936) and thinning was done on 21st Shahrewar 1345 F. (27th July 1936).



*Diseases and Pests.*—There was slight attack of Red Hairy Caterpillar but was checked by hand pickings. Aphis was also noticed but no damage was caused.

*Harvesting.*—The harvesting commenced on 11th Azur 1346 F. (16th October 1936) and was completed on the 9th Isfandar 1346 F. (11th January 1937), after collecting 7 pickings.

*Yields.*—Outturns obtained are given in the following statement.

[*Statement.*

*Kharif Cotton Varietal Test 1945-1946 Pashi.*

	E	D	C	B	A	E	D	C	B	A	E	D	C	B	A
Kapus	13.925	15.15	10.825	8.6	13.825	12.05	13.075	7.125	7.525	9.0	15.45	2.225	7.95	10.825	11.175
	E	D	C	B	A	E	D	C	B	A	E	D	C	B	A
Kapus	27.4	12.375	13.525	13.725	14.2	16.35	15.8	10.25	16.975	15.45	19.725	16.025	14.075	19.475	13.75

Six replications :—Dimensions of each plot =  $10' \times 132' = 1/33$  acre.

**SUMMARY OF RESULTS.**

	MEAN YIELDS IN POUNDS						General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E				
Per acre	425.7	424.2	350.6	408.8	580.2	450	36.96	110.88	
Percentage on general mean	5.4	5.73	22.8	4.19	28.94	..	..	..	..
Percentage on control	..	..	..	..	..	..	..	..	..

*Conclusion.*

E, D > C; A, B > C.

A = Gaorani No. 4, B = Gaorani No. 6, C = Gaorani No. 9, D = Gaorani No. 12, E = Gaorani No. 58 E.

*Experiment No. 9.—Comparison of Soya Beans Varieties.*

*Object.*—To find out the most profitable variety for Telingana.

*Varieties.*—The following varieties were tried.—

- (1) Large Brown.
- (2) Small Brown.
- (3) Small Green.
- (4) Large Yellow.
- (5) Small Yellow.

*Preparatory Cultivation.*—One ploughing was given on 30th Aban 1344 F. (6th October 1935) and two disc harrowings with country blade harrow were given on 20th Khurdad and 10th Amerdad 1345 F. (24th April and 15th June 1936).

*Manuring.*—30 cart-loads of compost were applied and well mixed in soil by working a cultivator on 22nd Thir 1345 F. (27th May 1936).

*Plotting.*—10 plots each measuring  $129\frac{1}{2}' \times 14'$  =  $1\frac{1}{24}$  acre were prepared to allow of two replications.

*Sowing.*—Seeds of different varieties were hand dibbled  $2' \times 18''$  apart on 22nd Amerdad 1345 F. (27th June 1936).

*Interculture.*—Five hand weedings were given on 31st Amerdad, 7th, and 16th Shahrewar, 7th Mehir and 4th Aban 1345 F. (6th July 13th and 22nd July, 13th August and 9th September 1936). Two interculturing were done on 7th Mehir, and 1st Aban 1345 F. (13th August and 6th September 1936).

*Irrigation and Rainfall.*—No irrigation was given. The crop received 22" of rain during the period of its growth.

*Germination and Growth.*—Germination was good and satisfactory. The dates of flowering are given below.—

*Variety*

*Date of flowering.*

- (1) Large Brown. 29th Shahrewar 1345 F.

(4th August 1936).

*Variety* *Date of flowering.*

- (2) Small Brown. 7th Mehir 1345 F.  
(13th August 1936).  
(3) Small Green. 7th Mehir 1345 F.  
(13th August 1936).  
(4) Small Yellow. 20th Mehir 1345 F.  
(26th August 1936).  
(5) Large Yellow. 30th Mehir 1345 F.  
(5th September 1936).

*Pests and Diseases.*—Nothing noteworthy.

*Harvesting.*—Different varieties were harvested on dates mentioned below as they matured.

- (1) Large Yellow 21st Azur 1346 F.  
(26th October 1936).  
(2) Small Brown. } 6th Dai 1346 F.  
(3) Small Green. } (10th November 1936).  
(4) Small Yellow. 20th Dai 1346 F.  
(24th November 1936).  
(5) Large Yellow 25th Dai 1346 F.  
(29th November 1936).

*Yields:*—The Yields are given in the following statement.

*Soya Bean Varietal Test 1345-1346 Fash.*

A	B	C	D	E	F	B'	C	D	E
12.25	16.75	8	7.5	16	23.25	24.5	12.5	7.5	28.25

Two replications.

Dimensions of plot =  $129\frac{1}{2}' \times 14' = 1/24$  acre.

**SUMMARY OF RESULTS.**

	MEAN YIELDS IN POUNDS					General mean	Standard error of treatment mean	Critical difference	
	A	B	C	D	E				
Per acre	..	426	495	246	180	531	376	71.33	213.99
Percentage on general mean	..	+ 13.3	+ 32.1	- 34.6	- 52.2	+ 41.3	..	..	..
Percentage on control	..	..	..	..	..	..	..	..	..

*Conclusion.*

$E = B > C = D$ ;  $A > D$ ;  $C = D$ .

A = Small Yellow<sup>w</sup>.

B = Large Yellow

C = Small Brown.

D = Large Brown.

E = Small Green.

*Experiment No. 10.—Comparison of Wheat Varieties.**Object.*—To find out the most profitable variety.*Varieties.*—The following varieties were tried.—

- (1) Pusa 4.
- (2) Pusa 111.
- (3) Pusa 80/5
- (4) Cawnpore 13
- (5) Bansi.
- (6) A. O. 13.
- (7) A. O. 85.
- (8) A. O. 88.
- (9) A. O. 90
- (10) A. O. 115.

*Preparatory tillage.*—Disc horrow was run on 31st Ardibehisht 1345 F. (4th April 1936). Five ploughings were given between 23rd Thir 1345 F. and 7th Aban 1345 F. (28th May 1936 and 12th September 1936). at an interval of one month. Two harrowings were given on 7th Khurdad and 1st Shahrewar 1345 F. (21st April and 7th July 1936).

*Manuring.*—800 lbs. of castor cake per acre were applied on 17th Aban 1345 F. (22nd September 1936).

*Plotting.*—the field was divided into 60 plots of 66' x 7½' or 1/88 acre each. The varieties were replicated 6 times.

*Sowing.*—Seed of different varieties was sown by American seed drill 9" apart on 14th Azur 1346 F. (19th October 1936).

*Interculture.*—Hand weeding was done on 18th Dai 1346 F. (22nd November 1936). Four mulchings were given on 21st and 27th Azur, 11th Dai and 9th Bhaman 1346 F. (26th October, 1st and 15th November and 12th December 1936).

*Germination and Growth.*—Germination was fair.

The dates of flowering of the various varieties were as follows.

<i>Name of variety.</i>	<i>Date of flowering.</i>	<i>Height.</i>
1. Pusa No. 4 ..	2nd Bahman 1346 F. (5th December 1936).	2'4"
2. Pusa No. 111 ..	3rd Bahman 1346 F. (6th December 1936).	2'4"

<i>Name of variety.</i>	<i>Date of flowering.</i>	<i>Height.</i>
3. Cawnpore No. 13.	8th Bahman 1346 F. (11th December 1936).	2'3"
4. Pusa 80/5 ..		
5. Bansi ..	9th Bahman 1346 F. (12th December 1936).	2'3"
6. A.O. 85 ..	11th Bahman 1346 F. (14th December 1936).	2'3"
7. A.O. 88 ..	14th Bahman 1346 F. (17th December 1936).	2'3"
8. A.O. 13 ..		
9. A.O. 115 ..	15th Bahman 1346 F. (18th December 1936).	2'3"
10. A.O. 90 ..	20th Bahman 1346 F. (23rd December 1936).	2'5"

*Irrigation and Rainfall.*—4 irrigations were given on 7th Dai, 4th Bahman, 2nd and 26th Isfandar 1346 F. 11th November, 7th December 1936, 4th and 28th January 1937. Besides this the varieties received 3.07" of rainfall during the period of growth.

*Harvesting.*—Different varieties were harvested on different dates as they matured, as follows.—

- (1) Pusa No. 4
- (2) Pusa No. 111
- (3) Pusa No. 80/5

17th Farwardi 1346 F. (18th February 1937).

- (4) A. O. 13
- (5) A. O. 85
- (6) A. O. 88
- (7) A. O. 115
- (8) Cawnpore No. 13
- (9) Bansi.

22nd Farwardi 1346 F. (23rd February 1937).

- (10) A. O. 90

1st Ardibehisht 1346 F. (5th March 1937).

*Yields.*—The yields are given in the attached statement.









*Experiment No. 11.—Comparison of Gram Varieties.*

*Object.*—To find out the most profitable variety.

*Varieties.*—The following varieties were tried.—

- (1) Cawnpore
- (2) Local.
- (3) Bengal.
- (4) Poona.
- (5) Sabour No. 4
- (6) Pusa No. 17
- (7) Pusa No. 25
- (8) Pusa No. 28

*Preparatory Cultivation.*—Disc harrow was worked on 21st Ardibehisht 1345 F. (25th March 1936). Five ploughings were given on 23rd Thir, 25th Amerdad, 23rd Shahrewar, 18th Mehir and 7th Aban 1345 F. (28th May, 30th June, 29th July 24th August and 12th September 1936). Three harrowings were given on 17th Khurdad, 2nd Shahrewar 1345 F. and 10th Azur 1346 F. (21st April, 8th July and 15th October 1936).

*Manuring.*—No Manure was applied.

*Plotting.*—The field was divided into 40 plots each measuring  $129\frac{1}{12}' \times 7\frac{1}{2}'$  or  $1/45$  acre. The varieties were replicated five times.

*Sowing.*—The varieties were sown on 23rd Azur 1346 F. (28th October 1936) with American seed drill 9" apart.

*Interculture.*—Two hand weedings on 12th Dai and 21st Bahman 1346 F. (16th November and 24th December 1936) were given. One mulching was done on 19th Dai 1346 F. (23rd. November 1936).

*Germination and Growth.*—Germination was good. the dates of flowering were as follows.—

*Variety.*

*Date of flowering.*

(1) Bengal.

24th Dai 1346 F.  
(28th November 1936).

(2) Poona.

25th Dai 1346 F.  
(29th November 1936).

<i>Variety.</i>	<i>Date of flowering.</i>
(3) Local.	7th Bahman 1346 F. (10th December 1936).
(4) Pusa No. 25.	10th Bahman 1346 F. (13th December 1936).
(5) Sabour No. 4.	12th Bahman 1346 F. (15th December 1936).
(6) Pusa No. 17.	27th Bahman 1346 F. (30th December 1936).
(7) Pusa No. 28.	14th Isfandar 1346 F. (16th January 1937).
(8) Cawnpore.	6th Isfandar 1346 F. (8th January 1937).

*Harvesting.*—The varieties were harvested on the following dates.—

Poona, Bengal, Local..7th Farwardi 1346 F. (8th February 1937).

Sabour No. 4..14th Farwardi 1346 F. (15th February 1937).

Pusa No. 25..22nd Farwardi 1346 F. (23rd February 1937).

Pusa No. 17, Cawnpore .. 30th Farwardi 1346 F. (3rd March 1937).

Pusa No. 28 .. 1st Ardibehisht 1346 F. (5th March 1937).

*Yields:*—The outturns are given in the following statement,

[Statement.





*Experiment No. 12.—Comparison of Rabi Jowar Varieties.*

*Object.*—To find out the most profitable variety for the Telingana tract.

*Varieties.*—The following varieties were tried.—

- (1) Sayi Junna.
- (2) Maldandi (Sangareddy)
- (3) Maldandi (Parbhani)
- (4) Markhandi.
- (5) Dagdi (Parbhani)
- (6) Californian Dwarf.

*Preparatory cultivation.*—Disc harrow was worked on 29th Ardibehisht 1345 F. (2nd April 1936). Six ploughings were done on 23rd Thir, 23rd Amerdad, 12th and 22nd Shahrewar, 19th Mehir and 7th Aban 1345 F. (28th May, 28th June, 18th and 28th July, 25th August and 12th September 1936). Two harrowings were done on 5th Farwardi and 16th Khurdad 1345 F. (7th February and 20th April 1936).

*Manuring.*—Field was manured at the rate of 6000 lbs. of compost per acre and well mixed with cultivator on 16th Aban 1345 F. (21st September 1936).

*Plotting.*—The field was divided into 24 plots, each measuring  $12' \times 110'$  or  $1/33$  acre. The varieties were replicated four times.

*Sowing.*—The varieties were sown on 13th Azur 1346 F. (18th October 1936) with seed drill  $1\frac{1}{2}'$  apart between rows and thinned on 13th Dai 1346 F. (17th November 1936) to leave the distance of 1' between plants.

*Interculture.*—Three mulchings were given on 21st and 27th Azur and 19th Dai 1346 F. (26th October, 1st November and 23rd November 1936).

*Irrigation and Rainfall.*—No irrigation was given, but the crops received 3.07" of rainfall, during the period of its growth.

*Germination and Growth.*—The germination was good. Californian Dwarf was the first to flower. The

date of flowering of each variety was as follows.—

<i>Variety.</i>	<i>Height</i>	<i>Date of flowering.</i>
Californian Dwarf.	3' 5"	20th Dai 1346 F. 24th November 1936).
Maldandi (Sangareddy).	4' 9"	27th Bahman 1346 F. (30th December 1936).
Maldandi (Parbhani).	4' 7"	-do- -do-
Dagadi	4' 2"	30th Bahman 1346 F. (2nd January 1936).
Markhandi.	4' 6"	1st Isfandar 1346 F. (3rd January 1937).
Sayi Junna.	5' 2"	5th Isfandar 1346 F. (7th January 1937).

*Pests and Diseases.*—Nothing note-worthy.

*Harvesting.*—The varieties were harvested on the following dates.—

Californian Dwarf. 13th Farwardi 1346 F. (14th February 1937).

Markhandi. 3rd Ardibehisht 1346 F. (7th March 1937).

Maldandi (Parbhani)	} 4th Ardibehisht 1346 F. (8th March 1937).
Maldandi (Sangareddy)	
Dagadi.	
Sayi Junna.	

*Yields.*—The yields are given in the following statement.

[*Statement.*

Rabi Jowar Varietal Test 1345 1946 *Fest.*

	D	E	F	A	B	C	..	..	..	..	..	..	..	..	..	..	..
Grain	81	24	19	27	13	19	..	..	..	..	..	..	..	..	..	..	..
Straw	96	90	132	82	54	82	..	..	..	..	..	..	..	..	..	..	..
	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C	D	E
Grain	35	31	44	42	40	31	29	34	39	45	36	26	27	27	34	34	27
Straw	84	150	144	92	140	165	43	128	123	125	114	130	36	124	105	95	97

Four replications :—Dimensions of each plot =  $110' \times 12' = 133$  acre. Length—North-south, Breadth—East-west.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN POUNDS.						General mean	Standard error of treatment mean	Critical difference	
	A	B	C	D	E	F				
Per acre	..	973.5	866.25	1,122	1,254	1,048	842	1,017.5	62.21	186.63
Percentage on general mean	..	— 4.4	— 14.9	+ 10.3	+ 23.3	+ 2.9	— 17.3	..	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..

## Conclusion.

D &gt; E; C = E &gt; F; A = B = F.

A = Californian Dwarf, B = Dagadi, C = Maldandi (Sangareddy), D = Maldandi (Parbhani), E = Markhandi, F = Sai Junna.



*Experiment No. 13.*—Comparison of Linseed Varietal Test.

*Object.*—To find out the most profitable variety for Telingana.

*Varieties.*—The following varieties were tried.—

- (1) Local.
- (2) Pusa H. 68
- (3) Pusa H. 55
- (4) Pusa T. 12
- (5) Pusa H. 21
- (6) Pusa T. 124

*Preparatory Cultivation.*—Disc harrow was run over once on 28th Ardibehisht 1345 F. (1st April 1936). Five ploughings were given on 25th Thir, 26th Amerdad, 22nd Shahrewar, 17th Mehri and 3rd Aban 1345 F. (30th May, 1st July, 28th July, 23rd August and 8th September 1936). Three harrowings with country blade harrow were given on 4th Farwardi 1345 F. (6th February 1936), 15th Khurdad, 15th Amerdad 1345 F. (19th April, 20th June 1936) and cultivator was run once on 1st Shahrewar 1345 F. (7th July 1936).

*Manuring.*—10 cart-loads of farm compost were added to the field and mixed with soil by Planet Junior Cultivator on 17th Aban 1345 F. (22nd September 1936).

*Plotting.*—30 plots each measuring  $59 \frac{1}{3}' \times 10 \frac{1}{2}'$  or  $\frac{1}{70}$ th acre were prepared to allow of five replications.

*Sowings.*—Seed of different varieties was hand dibbled in lines 9" apart on 22nd Azar 1346 F. (27th October 1936).

*Interculture.*—One hand weeding and norcrossing were done between 20th and 29th Dai 1346 F. (24th November and 3rd December 1936).

*Irrigation and Rainfall.*—Two irrigations were given on 18th Bahman and 9th Isfandar 1346 F. (21st December 1936 and 11th January 1937) in addition to 1. 89" of rainfall that the crop received during its growth.

*Germination and growth.*—Germination was good and highly satisfactory. The dates of flowering are given below.—

Variety.	<i>Date of flowering.</i>		
Local 12th Bahmon 1346 F.	(15th December 1936)		
Pusa H. 68 14th	„	(17th	„ )
Pusa H. 55 15th	„	(18th	„ )
Pusa T. 12 21st	„	(24th	„ )
Pusa H. 21 23rd	„	(26th	„ )
Pusa T. 124 24th	„	(27th	„ )

*Pests and Diseases.*—All the varieties were badly attacked by a fungus disease which affected the yield.

*Harvesting.*—All the varieties were harvested on 5th and 6th Ardibehisht 1346 F. (9th and 10th March 1936).

*Outturn.*—The yields are given in the statement attached.







*Observaion of miscellaneous Kharif Crops, 1345-1346 Fasli.*

S.No.	Crop	Area in acres	YIELDS PER ACRE IN POUNDS	
			Grain	Fodder
1	Ambada.. ..	1/90	180	..
2	Ballar .. ..	"	1,237 $\frac{1}{2}$	..
3	Bhurka Sawan .. ..	"	1,035	..
4	Castor Red .. ..	1/45	1,001 $\frac{1}{4}$	..
5	Jute .. ..	1/90	630	..
6	Kangni .. ..	"	360	..
7	Kodro .. ..	"	1,057 $\frac{1}{2}$	..
8	Kulthi .. ..	"	45	..
9	Lachna .. ..	"	1,057 $\frac{1}{4}$	..
10	Lobia Black .. ..	"	427 $\frac{1}{4}$	..
11	Lobia Brown .. ..	"	562 $\frac{1}{2}$	..
12	Maize .. ..	"	10,800	..
13	Muna Bundri .. ..	"	45	..
14	Muna Green .. ..	"	135	..
15	Niger .. ..	"	360	..
16	Moth .. ..	"	742 $\frac{1}{2}$	..
17	Til White .. ..	"	67 $\frac{1}{2}$	..
18	Til Black .. ..	"	337 $\frac{1}{2}$	..
19	Udid .. ..	"	742 $\frac{1}{2}$	..
20	Rajgira .. ..	"	45	..
21	Rala .. ..	"	45	..
22	Wagoo .. ..	"	1,215	..
23	Sawan .. ..	"	1,147	..
24	Termaric .. ..	"	380	..
28	Sun-hemp .. ..	"	787 $\frac{1}{2}$	..
26	Sunflower .. ..	"	810	..
27	Soya bean (Small green)	"	2,542 $\frac{1}{4}$	..
28	" (Small yellow)	"	1,755	..
29	" (Large yellow)	"	1,080	..
30	" (Small brown)	"	720	..
31	" (Large brown)	"	180	..

*Observation of miscellaneous Crops ( Rabi) 1345-1346 Fasli.*

S.No.	Crop			Area in acres	YIELDS PER ACRE IN POUNDS	
					Grain	Fodder
1	Coriander ..	..	..	1/90	45	..
2	Peas local ..	..	..	'	472½	..
3	Mustered ..	..	..	„	45	.
4	Tara Mira ..	..	..	„	45	.
5	Buck Wheat	..	..	„	630	..
6	Spelt Wheat	..	..	„	585	.
7	Mung Black	..	..	„	90	
8	Wheat local	..	..	„	495	.
9	Ballar Red	..	..	..	381¼	..
10	Lentil ..	..	..	„	22¼	..
11	Safflower ..	..	..	„	1,305	.
12	Lac ..	..	..	„	270	..
13	Fenugreek	..	..	„	45	..

*Non-experimental crops*:—Some fodder and general crops were grown in fields not occupied by the experiments in order either to secure fodder supply for the cattle, or study of behaviour, or multiplication of seed, etc. The following statement shows the out-turns of such crops together with the areas under each.

Name of crops	AREA		ACTUAL OUTTURN IN LBS.				Remarks
	Acres	Ghun- tas	Grain	Fodder			
				Green	Dry		
1. Agave ..	..	32	..	..	..	20 lbs. fibre.	
2. Arhar ..	6	4	2,137	..	2,748		
3. Bajra Cawn- pore Awne	2	20	..	584	..	Failure.	
4. Berseem ..	..	10	..	2,960	..		
5. Cotton ..	1	2½	385½	..	..	Kapas.	
6. Gram ..	1	..	280	..	..		
7. Guinea Grass Fod- der ..	..	31	..	15,062	..		
8. Jowar Kharif Fodder ..	24	2	5,186	69,127	58,720		
9. Lucerne ..	..	20	..	18,340	..		
10. Sugar-cane	1	..	28,375	..	..		
11. Tobacco ..	..	24	234	..	..	(Striped Canes). (Cured Leaves)	
12. Wheat ..	1	..	814	..	..		



*Permantent Improvements.*—Levelling of unirrigated areas continued. The digging of drains and preparation of approach roads in the levelled areas were accomplished.

*Buildings.*—Minor repairs to the various buildings and sheds were carried out as necessary.

*Cattle.*—All cattle maintained satisfactory condition. 4 pairs of animals were weak and old which were replaced by equal number of pairs of animals from the Mahbubnagar Farm.

*Implements.*—All implements were kept in working order by replacing the worn out parts as necessary. A dozen road-scrapers were newly purchased during the year under review.

The following implements were transferred from the Mahbubnagar Farm.—

(1) Victory Plough	2
(2) Konkon Plough	1
(3) Hyder Trencher	1
(4) Sickles.	20
(5) Gur Boiling Pan	1
(6) Poker	1
(7) Dora	1
(8) Jhara	1
(9) Khurpi	1
(10) Wooden laddle	2
(11) Fire grate	1
(12) Wooden Tray	4
(13) Gur Moulds	3
(14) Wooden Moulds of different sizes	4
(15) Barrel	1
(16) Level Bottle	2
(17) Foot-rule with level bottle	1
(18) Cherak-mote	6
(19) Hammer	1
(20) Chizle 1½"	1

(21) Chizle $\frac{1}{2}$ "	1
(22) Hammer Big.	1
(23) Vise.	1
(24) Lable plots (2 sides)	77
(25) Lable plots (single side)	565
(26) Hedge Chipper.	1
(27) Bullock Chains.	18
(28) Wooden Stand (Deal-wood)	1
(29) Plot lable iron rods.	578
(30) Air Valve New	1
(31) Stone for Oil Engine.	1
(32) Bins of different sizes	43

*Finances.*—Total expenditure during the year under review amounted to Rs. 7,415-6-1 and income totalled to Rs. 992-11-0.

*Farm Demonstration.*—The Annual Agricultural Demonstration was held on 4th Azur 1346 F. (9th October 1936).

*Charge and Establishment.*—Mr. Syed Hamid Ali took over charge of the Farm from Mr. Seetaram Pershad on 7th Aban 1345 F. and remained in charge of the farm and carried out his duties in the most satisfactory manner.

Mr. Mohomed Ali Khan, Assistant Farm Superintendent, remained in charge of the Farm, throughout the year.

(Sd.) A. MAJID,  
DEPUTY DIRECTOR OF AGRICULTURE,  
*Western Telingana Division,  
Himayatsagar, Hyderabad-Deccan.*

Statement showing the record of rainfall at the Government Agricultural Experimental Farm,  
Sangareddy for the year 1945-1946 Fash.

Date	Amer- dad	Shah- rewar	Mehir	Aban	Azur	Dai	Bah- mon	Isfin- dar	Far- wardi	Ardebe- hist	Khur- dad	Thir
1	..	..	0.26	0.11	..	..	..	..	..	..	..	..
2	1.25	..	..	1.12	..	..	..	..	..	..	..	..
3	..	0.57	..	0.87	..	..	..	..	..	..	0.42	..
4	0.21	1.66	..	..	..	..	..	..	..	..	0.19	..
5	0.23	0.36	..	..	..	..	..	..	..	..	..	..
6	..	0.19	0.21	..	..	..	..	..	..	..	..	0.36
7	..	0.13	0.08	..	..	..	..	..	..	..	0.38	..
8	0.22	0.06	0.17	..	..	..	..	..	..	..	..	..
9	0.12	..	..	..	..	..	..	..	..	..	..	..
10	..	..	0.73	..	..	..	..	..	..	..	..	..
11	..	0.23	0.61	..	..	..	..	..	..	..	..	..
12	0.20	..	0.52	0.95	..	..	..	..	..	0.14	..	..
13	..	0.90	..	..	..	..	..	..	..	1.03	..	..
14	..	0.09	..	..	..	..	..	..	..	..	0.35	..
15	..	0.62	..	..	..	..	..	..	0.19	..	0.20	..
16	0.46	..	..	..	..	..	..	..	0.20	..	0.90	..
17	0.33	1.07	..	..	..	0.62	..	..	0.05	..	..	..
18	..	0.65	..	..	0.69	..	..	..	..	..	0.13	..
19	..	0.26	..	..	0.05	..	0.89	..	..	0.20	..	..
20	0.54	..	..	0.24	..	..	..	..	..	..	..	..
21	0.26	..	..	1.27	..	..	..	..	..	..	..	..
22	..	..	0.28	..	..	..	..	..	..	0.09	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..
24	0.45	..	..	..	0.28	..	..	..	..	..	..	..
25	..	0.88	0.7	0.47	0.10	..	..	..	..	..	..	..
26	..	0.07	0.08	0.39	..	..	..	..	..	..	..	..
27	0.32	0.23	2.08	..	..	..	..	..	..	..	..	..
28	0.10	0.61	..	..	..	..	..	..	..	1.35	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	0.30	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..
	4.69	8.58	5.89	4.92	1.12	0.62	0.89	..	0.44	2.81	2.57	0.86

Total rainfall=32.89 inches.

*List of Experiments to be tried on the Government  
Experimental Farm, Sangareddy, for the year  
1346-1347 F.*

1. Manurial Experiment on Paddy with Nicifos.
2. Rotation Experiment in Chalka Soil.
3. Comparison of Paddy Varieties.
4. Comparison of Kharif Jowar Varieties.
5. Comparison of Bajra Varieties.
6. Comparison of Groundnut Varieties.
7. Comparison of Arhar Varieties.
8. Comparison of Kharif Cotton Varieties.
9. Comparison of Soya Bean Varieties.
10. Comparison of Wheat Varieties.
11. Comparison of Gram Varieties.
12. Comparison of Rabi Jowar Varieties.
13. Comparison of Linseed Varieties.

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ANNUAL REPORT OF THE GOVERNMENT  
EXPERIMENTAL FARM, RUDRUR, FOR THE  
YEAR 1345-46 F.

*Introduction.*—The land for this farm was acquired in 1340 F. (1931 A.D.) and the work was started in 1341 F. (1932 A.D.). The year under review has been the fifth year of the working of the farm. Most of the levelling work has been accomplished, and the farm lands are getting established and attaining uniformity in fertility.

*Situation.*—The farm is situated about a mile to the south of the village of the same name, along the southern side of the main road from Nizamabad to Banswada. The road is good and connects the farm with Nizamabad Railway station on His Exalted Highness the Nizam's Metre Gauge Railways with a distance of about 22 miles. Regular Railway Bus Service runs on the road twice daily.

A range of hilly mounds forms the South-eastern boundary of the farm, all other sides are bounded by open plains. The land slopes gently towards western side and facilitates natural drainage.

The P.W.D. Inspection Bungalow is situated inside the farm area and serves a useful purpose for the accommodation of those visiting the farm.

*Object.*—Rudrur Farm replaced the small experimental area at Nizamsagar, which had temporarily been taken over in 1338 F. The object of the experimental work being to investigate the problem of the best economic use of the immense quantity of water stored in the gigantic reservoir of Nizamsagar in raising valuable crops more especially sugarcane.

*Soil.*—The soil at Rudrur consists of both regur (black cotton soil) and chalka in well defined patches, and is representative of soils met with in the areas commanded by the Nizamsagar Project.

*Area.*—The total area of the farm may approximately be taken at 65 acres, out of which an area of 43 acres has been laid out in proper fields for experimental work. This area consists of 19 acres of chalka and 24 acres of regur.

*Sources of Irrigation.*—The farm is irrigated by distributory No. 30/1 of Varni Canal from Nizamsagar. Water-supply has been sufficient for needs throughout the year. There is also a finely built old well, situated in the farm area, which can be used for irrigating the fields in case of long closure of the canal.

*Season.*—The total rainfall during the year amounted to 42.02 inches which is a good deal more than that of the previous season. The heavy showers of rain in the months of Amerdad (June) and Shahrewar 1345 F. (July) 1936 caused water logging which affected some of the crops. The heavy showers (3.28") with stormy winds of 16th Khurdad 1346 F. (20th April 1937) damaged the standing crops in general and specially the cotton crop.

The lowest minimum temperature was 46° F. recorded in the last week of Bahman 1346 F. (December 1936) and the highest maximum went up to 112° F. during the month of Thir 1346 F. (May 1937). The maximum is 1° greater than that of the previous year.

*Experiments and cropping.*—The growth of the crops in the various fields has been patchy though not to the same extent as in previous seasons. The uniformity of fertility is getting established. The results of the experimental work carried out in the farm are recorded in the following pages:—

#### *Experiment No. 1.—Manurial Tests with Sugarcane.*

*Object.*—To find out the optimum manurial requirements of the sugarcane crop.

*Soil.*—Light chalka.

*Preparatory tillage.*—A crop of sann-hemp was grown which was ploughed in for green manure. Four ploughings with heavy iron plough were done followed by discing, harrowing and the working of pata for clod crushing

and securing finer tilth. Trenches were made 4' apart with the help of Victory plough and Hyder Trencher during the first week of Bahman 1345 F. (December 1935).

*Area and Plotting.*—One acre of area was set apart for this experiment. Sixteen plots of 2 ghuntas each in area were located in 4 rows well separated from each other by water channels running between. Fair-sized footpaths were left to separate the plots from each other in the rows.

*Manuring.*—The following scheme of manuring was adopted in addition to the ploughing in of a crop of sannhemp in the previous Kharif seasons.—

1. Castor Cake at 2,400 lbs. per acre  
plus Ammonium Sulphate at 150 lbs. per acre.
2. Castor Cake at 2,000 lbs. per acre  
plus Ammonium Sulphate at 125 lbs. per acre.
3. Castor Cake 1,600 lbs. per acre  
plus Ammonium Sulphate at 100 lbs. per acre.
4. Castor Cake at 1,200 lbs. per acre  
plus Ammonium Sulphate at 75 lbs. per acre.

Each of the above mentioned treatments was replicated 4 times in plots distributed according to the Latin Square Method.

The desired quantity of Castor Cake was made up in two equal applications in each plot; the first application was given just before planting and the second a month afterwards.

Ammonium Sulphate was applied in desired quantities at the time of the filling of trenches on the 26th Sahrewar 1345 F. (1st August 1936).

*Sowing.*—Planting was done in the usual manner by burying the cane sets end to end about 2" deep in the centre of trenches keeping the eye-buds sideways on the 5th Isfandar 1345 F. (8th January 1936). The sowing was followed by an immediate irrigation. The variety used was Co.213 and the seed rate employed was about 10,000 sets to the acre.

*Germination.*—Sprouting of the shoots started on the 28th Isfandar 1345 F. (31st January 1936). Gap-filling was done on 11th Farwardi 1345 F. (13th February 1936).

*Interculture.*—Eleven hoeings and weedings were done; also two earthings.

*Irrigation and Rainfall.*—Altogether eight irrigations were applied in addition to 41.48 inches of rainfall until the harvest of the crop.

*Growth.*—The growth was slightly patchy due mainly to the irregular fertility of soil. Flowering started on 3rd Dai 1346 F. (7th November 1936).

*Pests and Diseases.*—Stem-borer attacked the crop in its younger stages and proved to be rather troublesome. Striga-parasite appeared later and was checked by constant uprooting.

*Harvesting.*—The harvesting of the crop was started on the 11th Farwardi 1346 F. (12th February 1937) and was completed by the 2nd Ardibehisht 1346 F. (6th March 1937). The canes were crushed in Chattanooga Power-Driven Mill and juice was boiled to gur in Hadi's Improved Furnace.

*Yields.*—The following lay-out plan shows the distribution of the sub-plots as well as the actual yields of cane and gur in lbs. per plot.—

*Manurial experiments with sugarcane 1345-1346 F.*

	A	B	C	D
Cane ..	3,891	3,379	2,805	2,211
Gur ..	302	284	260	232
	B	C	D	A
Cane ..	3,289	2,912	2,170	2,406
Gur ..	361	288	231	229
	C	D	A	B
Cane ..	1,216	2,083	2,532	1,810
Gur ..	123	217	238	187
	D	A	B	C
Cane ..	1,758	2,499	1,744	2,749
Gur ..	152	269	200	204

Four replication on Latin Square Method

Dimensions=48'×45'=1/20 acre

Length=North-south, Breadth=East-west

A=2,400 lbs. Castor Cake+150 lbs. Ammonium Sulphate

B=2,000 lbs. Castor Cake+125 lbs. Ammonium Sulphate

C=1,600 lbs. Castor Cake+100 lbs. Ammonium Sulphate.

D=1,200 lbs. Castor Cake+75 lbs. Ammonium Sulphate.



## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.				General mean	Standard error of treatment mean	Critical difference
	A	B	C	D			
Per acre .. ..	5,190	5,160	4,375	4,160	4,720	470.54	1,411.62
Percentage on general mean	+9.96	+9.32	-7.30	-11.65	..	..	..
Percentage on control .	..	..	..	..	..	..	..

*Conclusion.*

$A=B=C=D.$

A=2,400 lbs. Castor Cake+150 lbs. Ammonium Sulphate, B=2,000 lbs. Castor Cake+152 lbs. Ammonium Sulphate, C=1,600 lbs. Castor Cake+100 lbs. Ammonium Sulphate, D=1,200 lbs. Castor Cake+75 lbs. Ammonium Sulphate.

### *Experiment No. 2.—The Sugarcane Planting Time Experiment.*

*Object.*—To find out if the sowings at different dates will effect on the date of the ripening of sugarcane, and whether it would be possible to obtain a protracted crushing period by arranging early and late sowings, without affecting on the yield or quality of gur.

*Soil.*—Light regur.

*Preparatory tillage.*—Three ploughings were done with Victory Plough during the months of Aban 1344 F. and Azur 1345 F. (September and October 1935) followed by blade harrowings. Levelling was done with wooden 'pata.' Trenches were made 4' apart with Victory Plough and Hyder Trencher.

*Area and Plotting.*—36 plots of one ghunta each in area separated from each other by water channels and footpaths were prepared to allow of six replications of six dates of sowing, in accordance with the Latin Square system of distribution.

*Manuring.*—Sann-hemp was grown in the field in the previous Kharif season and buried in the ground to serve as green manure. Farm yard manure at 20 cart-loads per acre was also applied in addition. Castor Cake at 40

maunds per acre was also applied in two equal dressings, first half a fortnight before planting and the second half three months after planting.

*Sowings.*—Six sowings were arranged at monthly intervals starting from 10th Dai 1345 F. (15th November 1935) to 11th Khurdad 1345 F. (15th April 1936).

Planting was done on due dates by burying sets about 2" deep end to end in the middle of the trenches and irrigating soon afterwards. Variety used was Co.213.

*Germination.*—Good germination in November, January and February sowings, while March and April sowings were defective.

*Interculture.*—Eight hoeings were done in all. Breaking of ridges was completed by the 31st Thir 1345 (5th June 1936).

*Irrigation and Rainfall.*—Thirteen irrigations were necessary for November sowings and five for April sowings. These irrigations were given in addition to about 39 inches of rainfall.

*Pests and Diseases.*—Stem-borer was responsible to a fair amount of damage. While smut was also noticed in a few stools which were uprooted and burnt. Striga was a difficult pest to check and has been responsible for considerable decrease in yields.

*Harvest.*—Flowering started on 14th Dai 1346 F. (18th November 1936) in the sowings of November to February whereas in the sowings of March and April no flowering was observed due to improper growth of canes as they were attacked by borers and striga. Harvesting started on the 12th Bahman 1346 F. (15th December 1936) and was completed by the 18th Bahman 1346 F. (21st December 1936).

*Yields.*—The following lay-out plan shows the distribution of plots as well as the actual yields per plot in lbs.

[Statement.

*Planting Time Test of Sugarcane 1345-1346 Fasli.*

		F	E	D	C	B	A
Cane	..	60	10	0	68	605	515
Gur	..	5	0.5	0	4.75	53	35
		A	F	E	D	C	B
Cane	..	62	7	41	20	40	377
Gur	..	5	1	3	2	3	32
		B	A	F	E	D	C
Cane	..	597	532	48	10	23	0
Gur	..	57	50	4	1	2	0
		C	B	A	F	E	D
Cane	..	350	974	170	0	7	0
Gur	..	33	92	10	0	1	0
		D	C	B	A	F	E
Cane	..	490	478	220	28	15	12
Gur	..	43	40	16	2.25	1	1
		E	D	C	B	A	F
Cane	..	257	197	186	19	20	60
Gur	..	21	20	15	1.25	1.75	5

Six replications on Latin Square System  
 Dimensions.— $36' \times 30'3'' = 1/40$  acre

A=November Planting  
 B=December Planting  
 C=January Planting.  
 D=February Planting  
 E=March Planting  
 F=April Planting

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.						General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E	F			
Per acre	698.2	1,676.8	638.4	446.4	183.2	106.4	624	282	846
Percentage on general mean	..	+168.7	+2.3	-28.46	-70.64	-82.79	..	..	..
Percentage on control	..	..	..	..	..	..	..	..	..

*Conclusion.*

$B > A = C = D = E = F.$

A=November Planting, B=December Planting, C=January Planting, D=February Planting, E=March Planting  
F=April Planting.

*Experiment No. 3.—Comparison of Sugarcane Varieties.*

*Object.*—To find out the most profitable variety suitable for local conditions.

*Soil.*—Light chalka.

*Preparatory tillage.*—Levelling of the field was done in the previous year. Four deep ploughings with a heavy inverting plough followed by discing, harrowing and working of pata for clod crushing were given. Trenches were made 4' apart in the first week of Bahman 1345 F. (December 1935) with the help of Victory Plough and Hyder Trencher.

*Area and plotting.*—144 lines each  $1/330$  acre in area were prepared in four blocks separated from each other by fair-sized channels. 36 varieties of thick, medium and thin canes were sown separately in blocks in a randomized method.

*Manuring.*—In addition to a crop of sann-hemp having been ploughed in the previous Kharif season to serve as green manure, Castor Cake at 40 maunds per acre was applied in two equal dressings.

*Sowings.*—Sets of cane consisting of 3 nodes each were planted end to end about 2" deep in the middle of the furrow keeping the eye-buds sideways. The planting was done on 2nd Farwardi 1345 F. (4th February 1936) and groundnuts were sown on ridges 9" apart on 4th Farwardi 1345 F. (6th February 1936). 33 sets of each variety were planted in each line. The sowing was followed with an irrigation immediately afterwards.

*Germination.*—Sprouting of shoots started on 20th Farwardi 1345 F. (22nd February 1936). Gap-filling was done in the month of Khurdad 1345 F. (April 1936).

*Interculture.*—Fourteen hoeings and weedings were done in all. First earthing was completed in the first fortnight of Amerdad 1345 F. (June 1936) and the second by the 8th Shehrewar 1345 F. (14th July 1936).

*Irrigations.*—Four irrigations were given in all in addition to 41.48 inches of rainfall upto the time of harvest.

*Pests and Diseases.*—Stem-borer attacked in early stages and was responsible to a fair amount of damage in all varieties more especially in soft ones.

Striga-parasite sprouted in the field in fairly large distribution. Constant uprooting was resorted to in order to keep the weed under check.

Some stray cases of smut were also noticed in the medium varieties. Attacked stools were uprooted and burnt.

*Growth*.—Owing to lack of uniformity in the fertility of the field, the growth was not quite even all over. Some plots exhibited a patchy look. The growth and tillering were both poor. Flowering dates of the various varieties are shown below:—

1. Co.351	}	19th Azur 1346 F. (24th October 1936).
2. Co.352		
3. Co.356	}	26th Azur 1346 F. (31st October 1936).
4. Co.357		
5. Co.513	}	29th Azur 1346 F. (3rd November 1936).
6. Co.313		
7. Co.301		
8. Co.223		
9. Co.353		
10. Co.355		
11. E.K.28		
12. P.O.J.2878		
13. Co.413		
14. Co.411		
15. P.O.J.2725	}	5th Dai 1346 F. (9th November 1936).
16. Co.404		
17. Co.408	}	14th Dai 1346 F. (18th November 1936).
18. Co.331		
19. Co.213		
20. Co.281		
21. Co.300		
22. Co.419		
23. Co.427		
24. Co.402		
25. Co.417		
26. Co.423		
27. P.O.J.2883		

28. Co.290 15th Dai 1346 F. (19th November 1936).  
 29. P.O.J.2714 23rd Dai 1346 F. (27th November 1936).  
 30. Co.360 7th Bahman 1346 F. (10th December 1936).  
 31. Co.426 7th Bahman 1346 F. (10th December 1936).  
 32. D.109 12th Bahman 1346 F. (15th December 1936).

*Harvesting.*—The harvesting was started from the 13th Isfandar 1346 F. (15th January 1937) to 4th Ardi-behisht 1346 F. (8th March 1937). The canes were crushed in Chattanooga Power-Driven Mill and juice was boiled to gur in Hadi's Improved Furnace.

*Yields.*—The following lay-out plan shows the distribution and yields of cane and gur in lbs. per plot of different varieties.

*Line Varietal Test of Sugarcane 1345-1346 Fasli.*

i	81	D	175	C	194	l	74
	7.12		19.89		18		5.12
h	80	A	181	K	132	j	190
	8.12		25.69		10		22
v	108	M	166	H	120	i	63
	11.63		19.38		15.31		5.75
l	35	H	185	O	57	h	70
	2.75		22		7.94		7.38
Y	85	O	106	F	170	g	97
	10		12.56		15.38		6.31
R	149	N	152	B	140	f	48
	16.19		17.31		17.13		3.63
Z	24	L	108	I	115	e	200
	2.37		18.5		5.25		24.5
b	186	E	196	M	174	d	24
	22		24.12		18.94		44
a	143	G	155	A	145	b	203
	23.94		20.5		19.37		26.19
T	152	F	172	N	156	a	150
	18.12		15.63		16.31		18.44
j	180	C	197	G	205	Z	21
	20.62		22		29.56		1.94
U	26	I	72	J	169	Y	142
	1.75		3.22		17.5		14.94
X	380	J	119	E	211	X	80
	27.81		11.31		25.81		4.81
Q	80	K	54	L	172	W	141
	2.75		5.44		20.81		16.13

e	207	B	142	D	210	V	109
	25.4		18.19		22.69		11.31
g	100	Q	37	Z	27	U	44
	8.43		3.19		2.38		3.06
W	92	X	370	T	202	T	165
	9.06		25.38		24.25		19.56
d	29	R	151	W	92	S	62
	0.53		16.69		10		6.81
P	79	g	125	f	51	R	246
	5		10.88		4.5		27.12
S	36	T	150	V	31	Q	66
	3.56		19.06		3.13		5.06
f	19	Z	34	g	88	P	104
	1.5		3.31		7.25		7.75
G	95	Y	170	S	76	O	125
	16		16		8.38		14.75
B	152	f	49	j	145	N	158
	17.56		3.38		16.62		17.31
E	183	U	39	i	20	M	172
	21.81		3.63		2.13		19.38
A	58	P	67	l	42	L	195
	7.63		4.5		3.81		20.69
I	96	i	49	U	10	K	97
	4.25		5		4.75		13
D	149	V	46	a	690	J	209
	16.19		3.94		14.75		20.87
O	126	c	163	Y	47	I	84
	14.75		22.81		5.06		3.25
J	152	j	170	Q	Nil	H	185
	14.31		17.75		Nil		20.19
K	96	l	19	R	46	G	115
	8.56		1.31		5		14.94
H	219	W	72	d	Nil	F	113
	27.5		8.1		Nil		9.56
L	175	a	100	e	60	E	100
	23		15.31		9.25		12.25
C	199	h	41	b	40	D	100
	22		4.12		4.31		11.25
F	134	D	61	P	45	c	124
	11.19		6.25		2.75		12
N	98	b	76	X	Nil.	B	94
	10.06		8.5		Nil.		10.13
M	117	d	6	h	25	A	73
	12.31		0.03		3.38		8.31
A=Co.	351	B=Co.	290	C=Co.	331	D=Co.	300
E=Co.	356	F=Co.	223	G=Co.	281	H=Co.	313
I=Co.	360	J=Co.	357	K=Co.	353	L=Co.	213
M=Co.	301	N=Co.	355	O=Co.	352	P=Co.	408
Q=D.	109	R=Co.	426	S=Co.	402	T=Co.	417
U=H.M.	544	V=Co.	411	W=Co.	427	X=P.O.J.	2883
Y=Co.	404	Z=Fiji B		a=Co.	413	b=Co.	419
d=H.M.	544	(striped)		e=Co.	513	f=P.O.J.	2714
g=P.O.J.	2878	h=E.K.	28	i=H.M.	320	j=Co.	423
				l=P.O.J.	2725.		

NOTE :—The upper figures represent the weight of cane in pounds ;  
the lower figures, the weight of gur in pounds.



*Experiment No. 4.—Comparison of Kharif Jowar Varieties.*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—Mixed chalka.

*Preparatory tillage.*—Three ploughings and four harrowings were done and the land was levelled by pata.

*Area and plotting.*—48 plots of less than a ghunta each in area were laid out in an acre field to allow of six replications of the eight varieties. Plots were separated from one another by small footpaths between.

*Manuring.*—Due to scarcity of farm yard manure sheep folding was done.

*Sowing.*—Seed of different varieties treated with Sulphur powder was sown behind the cultivator in rows 1½' apart on the 5th Amerdad 1345 F. (10th June 1936).

*Germination.*—All varieties germinated well. The plants were thinned to about 9" apart on the 16th Shch-rewar 1345 F. (22nd July 1936).

*Weedings and Interculture.*—Three weedings and one hoeing were done.

*Irrigation and Rainfall.*—No irrigation was applied. Total rainfall from the time of sowing to the date of harvesting amounted to 32.60 inches.

*Pests and Diseases.*—Stem-borer was minor pest.

*Harvesting and Yields.*—There was average growth. Harvesting was done between the 18th and 24th Dai 1346 F. (22nd and 28th November 1936).

The following lay-out plan shows the distribution of the various varieties in the field as well as the actual yields in lbs. per plot:—

[Statement.

*Varietal Test of Kharif Jowar 1345-1346 F*

Grain	..	H 4—0	D 2—4	A 6—0	B 3—14	C 3—9	F 1—14
Fodder	..	60—0	47—0	260—0	59—0	38—0	25—0
Grain	..	G 4—6	B 5—5	H 9—14	E 6—8	D 5—0	C 4—4
Fodder	..	26—0	110—0	112—0	82—0	62—0	41—0
Grain	..	F 7—2	H 9—14	E 11—12	C 14—11	A 13—4	B 4—15
Fodder	..	190—0	124—0	200—0	165—0	119—0	69—0
Grain	..	E 7—4	G 8—12	B 9—4	F 11—10	H 10—8	A 7—12
Fodder	..	69—0	180—0	136—0	124—0	99—0	45—0
Grain	..	D 4—2	E 4—12	C 6—8	G 6—1	F 4—8	H 11—8
Fodder	..	106—0	90—0	102—0	69—0	87—0	60—0
Grain	..	C 5—14	F 7—7	G 5—12	A 7—0	E 5—0	D 4—8
Fodder	..	110—0	155—0	103—0	111—0	122—0	72—0
Grain	..	B 4—4	A 15—8	D 5—0	H 4—10	G 7—12	E 6—4
Fodder	..	107—0	59—0	300—0	224—0	181—0	74—0
Grain	..	A 4—0	C 3—14	F 4—5	D 4—12	B 1—12	G 1—8
Fodder	..	75—0	102—0	27—0	118—0	74—0	33—0

NOTE.—Figures represent weight in lbs. and ozs.

Six replications in randomised plots.

Dimension=46' × 15'=1/63.13 acre.

A=Ramkhel.

B=Pocha Jonna.

C=Local Yellow.

D=Local White.

E=Kodaldani.

F=Illaspuri.

G=Cawnpore Dodania

H=Aishpuri.

# SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.								General mean	Stand-ard error of treatment mean	Critical differ-ence
	A	B	C	D	E	F	G	H			
Per acre	563	309	408	270	436	390	359	530	408	71	213
Percentage on general mean	+37.99	-24.26	..	-33.82	+6.86	-4.41	-12.01	+29.90	..	..	..
Percentage on con- trol.	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

A=H > B=D; =C=F=G=B=D.

A=Ramkhet. B=Pogha Jouna. C=Local Yellow. D=Local White. E=K. Mahal. F=Lashori.  
G=Cawnpore Dodania. H=Aishpuri.

*Experiment No. 5.—Comparison of Bajra Varieties.*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—Light chalka.

*Preparatory tillage.*—Three ploughings with Victory plough and six harrowings were done. Twice pata was run for levelling the plots.

*Area and Plotting.*—48 plots of 46'  $\times$  15' or 1/63. 13 acre each in area were prepared separated from each other by small footpaths left between. Four replications of the seven varieties were arranged.

*Manuring.*—Farm yard manure at 10 cart-loads (cart-load = 1,200 lbs.) per acre was applied in the beginning of Amerdad 1345 F. (second week of June 1936).

*Sowing.*—The seeds of different varieties were sown in lines 1½' apart by dropping the seed behind the cultivator on the 6th Mehir 1345 F. (12th August 1936). Seed-rate being 12 lbs. per acre. Sowing was late due to rain which did not allow the sowing operation.

*Germination.*—Sprouting was good and germination was practically complete in all varieties a week after sowing. Thinning of the seedlings was done to allow about 9" between the plants.

*Interculture.*—Three hoeings and three weedings were done in all.

*Growth.*—The growth was not good owing to the excess of rains in the growing season. The first appearance of ear-head was noticed on the 22nd Aban 1345 F. (27th September 1936) in the varieties of Behar, Cawnpore Awned and Akola.

*Irrigation.*—No watering was done. The total rainfall during the period the crop was in the field amounted to 14. 67 inches.

*Pests and Diseases.*—Nothing very serious. Sparrows and birds used to visit the field in large flocks when the crop was nearing maturity.

*Harvesting and Yields.*—The harvesting started on 3rd Bahman 1346 F. (6th December 1936) and was completed by the 11th Bahman 1346 F. (14th December 1936).

The following lay-out plan shows the distribution of the varieties in the field as well as the actual yield per plot in lbs.

Grain	..	H	D	A	B	C	F
Fodder	..	3—0	3—8	1—8	3—4	3—5	2—9
		9—0	11—0	6—4	6—0	11—0	4—8
Grain	..	G	B	H	E	D	C
Fodder	..	2—13	1—1	4—1	3—10	2—7	2—12
		8—0	12—0	12—0	10—0	11—0	9—0
Grain	..	F	H	E	C	A	B
Fodder	..	3—11	3—0	2—2	3—7	1—14	3—2
		8—0	9—8	8—0	11—0	8—0	7—0
Grain	..	E	G	B	F	H	A
Fodder	..	4—7	3—0	3—7	2—3	3—7	3—1
		11—8	11—0	9—0	9—8	11—0	11—0
Grain	..	D	E	C	G	F	H
Fodder	..	3—14	4—7	5—12	1—4	2—5	4—15
		12—0	14—0	23—0	7—0	9—8	12—0
Grain	..	C	F	G	A	E	D
Fodder	..	3—0	3—11	3—8	4—7	2—2	3—2
		11—8	9—0	11—8	15—0	8—0	8—8
Grain	..	B	A	D	H	G	E
Fodder	..	2—14	2—6	2—8	3—11	6—15	3—5
		9—0	9—0	11—8	11—8	11—0	5—0
Grain	..	A	C	F	D	B	G
Fodder	..	3—10	4—2	3—11	4—3	4—4	1—3
		9—0	14—8	7—0	13—8	10—0	11—8

NOTE.—Figures represent weights in lbs. and ozs.  
Six replications in randomised plots.  
Dimensions=46' × 15' = 1/63.13 Acre.

A=Local.

B=Kambo.

C=Jamnagar African.

D=Cawnpore Awned.

E=Behar.

F=Akola 32 C.

G=Akola 14 B.

H=Akola.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.								General mean	Stand-ard error of treat-ment mean	Critical differ-ence
	A	B	C	D	E	F	G	H			
Per acre	177.08	189.45	235.47	206.43	211.48	190.65	195.65	232.95	211.49	31.565	94.695
Percentage on general mean	-16.28	-10.43	+11.34	-2.4	+0.01	-9.86	-7.49	+10.15	..	..	..
Percentage on con-trol	..	..	..	..	..	..	..	..	..	..	..

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*Conclusion.*

C=H=E=D=G=F=B=A.

A=Local, B=Kambo, C=Jamnagar African, D=Cawnpore Awned, E=Behar, F=Akola 32 C, G=Akola 14 B,  
H=Akola.

*Experiment No. 6.—Comparison of Groundnut Varieties.*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—Chalka.

*Preparatory tillage.*—Three ploughings with a Victory plough followed by four harrowings with blade harrow were done and the land was levelled finally with running pata twice.

*Area and Plotting.*—42 plots of about  $1/50$  acre each in area were prepared separated from each other by well marked interspaces.

*Manuring.*—No manure was given.

*Sowing.*—Seeds were dibbled in rows 1' apart on the 8th Amerdad 1345 F. (13th June 1936). The distance from seed to seed in the rows kept 9" seed-rate being 50 lbs.

*Germination and Growth.*—Germination was good. Some gap-filling was done on 19th Amerdad 1345 F. (24th June 1936). Flowering started within a month after sowing.

*Weedings and Interculture.*—Two weedings and two hoeings were done in all.

*Irrigation and Rainfall.*—The crop received 29. 92" of rainfall during the period it was in the field. Owing to drought at the time of harvesting, light irrigation had to be applied to facilitate uprooting of the nuts.

*Pests and Diseases.*—Slight attack of cut-worm in early stages. Tikka disease was noticed on the leaves in later stages. Wild boars and crows were also responsible for some damage.

*Harvesting.*—The Spanish Peanut varieties, Small Japan and Bhadegaon were the first to ripen and were uprooted on the 20th Aban 1345 F. (25th September 1936). The large nut varieties were harvested on the 27th Azur 1346 F. (1st November 1936).

*Yields.*—The following lay-out plan shows the distribution of the varieties in the plots as well as the actual yields per plot in lbs.

*Groundnut Varietal Test 1845-1846 Fasli.*

Nuts	..	A 32—5	F 18—0	G 42—4	D 26—0	E 22—0	B 22—5
Straw	..	1200—0	55—0	102—0	65—0	42—0	102—0
Nuts	..	B 27—0	A 34—5	C 35—0	F 28—0	G 14—8	E 23—0
Straw	..	83—0	91—0	110—0	60—0	75—0	45—0
Nuts	..	C 33—0	D 30—0	E 31—0	A 30—4	B 20—0	G 21—2
Straw	..	92—0	80—0	82—0	65—0	67—0	101—0
Nuts	..	D 22—0	B 31—0	F 30—0	E 42—0	A 35—0	C 25—0
Straw	..	102—0	85—0	52—0	82—0	67—0	106—0
Nuts	..	E 42—5	G 35—0	B 35—5	C 23—5	D 30—0	F 28—0
Straw	..	49—0	56—0	91—0	90—0	69—0	90—0
Nuts	..	F 32—0	E 26—5	D 20—5	G 26—6	C 28—0	A 25—6
Straw	..	90—0	59—0	51—0	109—0	115—0	66—0
Nuts	..	G 16—0	C 21—5	A 33—0	B 45—0	F 32—0	D 29—0
Straw	..	98—0	113—0	85—0	86—0	50—0	195—0

Figures represent weights in lbs. and ozs.

Six replications in randomised plots.

Dimensions=54'×16'=1/50.46 Acre.

A=Hebbal No. 1.

B=Spanish Peanut No. 9.

C=Madagaskar erect.

D=Bhadegaon.

E=Spanish Peanut No. 5.

F=Kanki No. 17.

G=Small Japan.



# SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.							General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E	F	G			
Per acre ..	1,603.23	1,522.56	1,396.52	1,325.94	1,572.98	1,411.65	1,310.82	1,446.94	147.72	443.16
Percentage on general mean	+10.8	+5.22	-3.49	-8.36	+8.71	-4.39	-9.41	..	..	..
Percentage on control ..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

A=E=B=F=C=D=G,

A=Hebbal No. 1, B=Spanish Peanut No. 9, C=Madagaskar erect, D=Bhadagaon, E=Spanish Peanut No. 5, F=Kanki No. 17,  
G=Small Japan.

*Experiment No. 7.—Comparison of Arhar Varieties.*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—Light chalka.

*Preparatory tillage.*—Two ploughings with a Victory Plough followed by two harrowings were done. Pata was run twice to level the land.

*Area and plotting.*—90 plots of  $1/134.4$  acre each in area were prepared separated from each other by well marked interspaces.

*Manuring.*—No manure was given.

*Sowing.*—The seeds were dibbled one and a half feet apart in lines 3' apart on the 7th Amerdad 1345 F. (12th June 1936).

*Germination and Growth.*—Germination was good in all the varieties. Thinning was completed by the 23rd Shahrewar 1345 F. (29th July 1936). Growth was satisfactory.

*Weedings and interculture.*—Seven weedings and hoeings were done in all.

*Irrigation and Rainfall.*—No watering was done. There was about 35. 30'' of rain during the period the crop was in the field.

*Pests and Diseases.*—The Hairy caterpillar was found slightly attacking the crop. Some blister beetles were also noticed.

*Harvesting.*—The harvesting of various varieties was done on different dates in accordance with the time of their maturity as follows:—

Pusa E.                    29th Dai 1346 F. (3rd December 1936).

Coimbatore Red. 15th Bahman 1346 F. (18th December 1936).

Local. 20th Bahman 1346 F. (23rd December 1936).

Poona Red.            } 5th Isfandar 1346 (7th January 1936).  
Nizam.                }

Nagpur. 19th Farwardi 1346 F. (20th February 1937).

Pusa 80. 5th Ardibehisht 1346 F. (9th March 1937).

Pusa A. 2. 6th Ardibehisht 1346 F. (10th March 1937).

Pusa T. G. 15th Ardibehisht 1346 F. (19th March 1937).

Cawnpore. 15th Ardibehisht 1346 F. (19th March 1937).

*Yields.*—The following lay-out plan shows the distribution of the varieties in the field as well as the actual yields per plot in lbs.

*Arhar Varietal Test 1345-1346 Faslî.*

Grain..	A 4—8	H 6—0	J 7—0	C 9—0	I 11—0	B 3—8	D 4—8	G 3—14	E 6—8
Grain..	B 4—8	E 6—0	I 8—0	H 7—6	J 6—8	D 5—8	F 6—8	A 4—8	C 9—8
Grain..	C 6—0	B 5—8	H 7—8	E 8—0	G 5—4	I 8—0	J 5—8	F 4—8	A 4—0
Grain..	D 9—0	J 6—0	C 7—0	A 5—12	H 7—14	G 4—6	I 9—0	E 5—0	F 4—0
Grain..	E 6—0	A 7—0	D 5—0	G 3—6	F 3—8	C 6—8	H 6—2	I 5—0	B 3—0
Grain..	F 3—0	C 8—0	E 7—8	I 10—0	D 7—0	H 8—4	B 3—4	J 4—8	G 7—2
Grain..	G 8—4	F 6—4	B 4—8	D 5—0	E 8—0	J 5—8	A 4—8	C 8—0	I 7—0
Grain..	H 8—0	G 4—7	F 6—0	J 4—0	C 10—0	A 2—0	E 8—8	B 6—0	D 6—0
Grain..	I 5—0	D 6—0	A 3—8	F 8—8	B 4—0	E 6—8	G 5—2	H 5—8	J 50
Grain..	J 7—0	I 8—0	G 6—3	B 4—4	A 4—12	F 3—0	C 4—0	D 5—0	H 9—0

Figures represent weight in lbs. and ozs.

9 replications in randomised plots.

Dimensions=36'×9'=1/134.4 acre.

A=Pusa 80.

B=Pusa T.G.

C=Pusa E.

D=Pusa A. 2.

E=Poona Red.

F=Nizam.

G=Nagpur.

H=Local.

I=Coimbatore Red.

J=Cawnpore.

## SUMMARY OF RESULTS.

—	MEAN YIELDS IN LBS.										Stand- ard error of treat- ment mean	Critical differ- ence
	A	B	C	D	E	F	G	H	I	J		
Per acre	611	565	1,012	788	922	670	707	959	1,055	758	65.66	196.98
Percentage on general mean	-24.12	-29.62	+26.00	-2.00	+14.75	-16.75	-12.12	+19.37	+31.37	-5.75	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

I=C>D; H>J; E>G; D>B; J=G=F=A=B.

A=Pusa 80, B=Pusa T.G., C=Pusa E, D=Pusa A, 2, E=Poona Red, F=Nizam, G=Nagpur, H=Local, I=Coimbatore Red, J=Cannipore

*Experiment No. 8.—Comparison of Tobacco Varieties.*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—Medium black.

*Preparatory tillage.*—Four ploughings and two harrowings were done in the preparation of land.

*Area and Plotting.*—16 plots each of  $1/22$  acre were prepared in an acre field separated from each other by means of interspaces.

*Manuring.*—Twenty cart-loads per acre of compost were applied and mixed with the soil before transplanting.

*Sowings.*—Different varieties of seedlings were transplanted on 26th Aban 1345 F. (1st October 1937) 2' apart both the ways and the plants were immediately hand-watered.

*Germination and Growth.*—As the seedlings were not established properly gap-filling was done upto 15th Dai 1346 F. (19th November 1936).

*Interculture.*—Six intercultures and weeding were given. Suckering and topping were continued from 17th Bahman 1346 F. to 13th Ardibehisht 1346 F. (20th December 1936 to 17th March 1937).

*Irrigation and Rainfall.*—Nine light waterings were given in addition to 7.08" of rainfall from the date of transplanting to the date of harvesting.

*Pests and Diseases.*—Crop was not affected with any serious pest.

*Harvesting.*—All the four varieties were harvested on 15th Ardibehisht 1346 F. (22nd December 1937). Curing was completed by the 3rd Khurdad 1346 F. (7th April 1937).

*Yields.*—The following lay-out plan shows the distribution of the varieties in the field as well as the actual yield per plot in lbs.

*Tobacco Varietal Test 1345-1346 Faski.*

D 11—0	B 12—0	A 10—5	C 15 0
C 19—0	A 12—0	B 6 --0	D 16
B 9—0	C 15—0	D 9—0	A 10--0
A 11—0	D 15—	C 12—0	B 10—0

Figures represent weight in lbs. and ozs.

Four replications in randomized plots.

Dimensions=90' × 22' = 1/22 acre.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.				General mean	Standard error of treatment mean	Critical difference
	A	B	C	D			
Per acre ..	240	205	337	282	265	22.77	68.31
Percentage on general mean	-9.41	-22.7	+27.16	+6.38	..	..	..
Percentage on control..	..	..	..	..	..	..	..

*Conclusion.*

C > A=B; D > B.

A=Adcock, B=Pusa 177 C=Guntur Broad Leaf, D=Pusa 28.

*Experiment No 9.—Comparison of Wheat Varieties.*

*Object.*—To find out the most profitable varieties for the tract.

*Soil.*—Black.

*Preparatory tillage.*—Green manuring with Sann-hemp was done in the previous Kharif season. The land was ploughed twice with Victory plough, two harrowings were given and 4 times pata was run to break the clods and level the field.

*Area and Plotting.*—60 plots of  $4.5' \times 108' = 89.629$  acre each in area were prepared in an acre field separated from each other by leaving interspaces between.

*Manuring.*—The field had been green manured with sana-hemp in previous Kharif season. In addition 800 lbs. of Castor Cake were applied.

*Sowing.*—The different varieties were sown behind a cultivator in their respective plots on the 18th Azur 1346 F. (23rd October 1936) in lines 9" apart and covered by working pata afterwards.

*Germination and Growth.*—Germination was satisfactory in all plots. The plants grew to a height of 3'. Ear-heads started coming out on 26th Dai 1346 F. (30th November 1936) earliest being Pusa 111 and Pusa 4. Others started on 10th Bahman 1346 F. (13th December 1936).

*Weedings and Interculture.*—Three weedings were done in all. Roguing of the plants was done on 9th Isfandar 1346 F. (11th January 1937).

*Irrigations.*—Six light irrigations were done in addition to 5.65" of rainfall that the crop received.

*Pests and Diseases.*—Smut was noticed in A. O. and Cawnpore varieties. The plants were uprooted and burnt. Field-rat trouble was also noticed.

*Harvesting.*—Pusa 4, Pusa 111 varieties were the earliest to ripen and were harvested on the 25th. and 26th



Isfandar 1346 F. (27th and 28th January 1937) respectively. Other varieties were harvested on the following dates as they ripened:—

Pusa 80/5.	20th Farwardi 1346 F. (21st February 1937)
Bansi.	do do
A. O. 88	23rd Farwardi 1346 F. (24th February 1937)
A. O. 90	} 28th Farwardi 1346 F. (29th February 1937)
A. O. 85	
A. O. 115	
A. O. 13	
Cawnpore	2nd Ardibehisht 1346 F. (6th March 1937)

*Yields.*—The following lay-out plan shows the distribution of the varieties in the field as well as the actual yield per plot in lbs.





*Experiment No. 10.—Comparison of Gram Varieties.*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—(Regur, deep black).

*Preparatory tillage.*—Two deep ploughings were given and then disc. harrow and pata were run to break clods, and level the land.

*Area and plotting.*—An acre field was divided into 40 plots  $110' \times 8\frac{1}{4}' = 1/48$  acre each leaving interspaces between the plots to separate them from one another.

*Manuring.*—No manure was applied.

*Sowing.*—Seeds were sown in lines 9" apart behind a cultivator at 60 lbs. per acre on the 16th Azur 1346 F. (21st October 1936) and covered by working pata afterwards.

*Germination and Growth.*—Germination was very poor in Pusa 28, and in other varieties it was very satisfactory. Growth was fair but due to cold waves the crop was slightly affected.

*Weedings and Interculture.*—One irrigation was given just after sowing to help germination. The crop received 5.65" of rain during the growing period.

*Pests and Diseases.*—The crop was attacked slightly by Pod borer and hand picking of caterpillars was resorted to.

*Harvesting.*—Different varieties were harvested as they ripened on different dates as follows:—

Bengal	..	26th Isfandar 1346 F. (28th January 1937).
Poona	}	9th Farwardi 1346 F. (10th February 1937).
Local		
Cawnpore		
Pusa 17	}	24th Farwardi 1346 F. (25th February 1937).
Pusa 25		
Sabour 4		

Pusa 28      ..      As the seed was old and did not germinate well. A few plants were in the plot which were uprooted on 25th Farwardi 1346 F. (26th February 1937).

*Yields.*—The following lay-out plan shows the distribution of the varieties in the field as well as the actual yields in lbs. per plot.





*Experiment No. 11.—Comparison of Rabi Jowar Varieties.*

*Object.*—To select a profitable variety for the tract.

*Soil.*—Medium Regur.

*Preparatory tillage.*—Two ploughings with a Victory plough followed by two harrowings were given. Finally pata was run to level the plot.

*Area and plotting.*—One acre field was divided into 20 plots measuring 110' x 18' or 1/22 acre each. The plots were well separated from each other by leaving interspaces between.

*Manuring.*—In addition to the green manuring of sann-hemp in previous season twenty cartloads (cart-load 1,200 lbs.) of well rotten Farm Yard Manure were applied and well mixed in the soil.

*Sowing.*—The different varieties were sown in their respective plots on the 9th Azar 1346 F. (14th October 1936) in lines 1½' apart behind a Country Plough and covered by working a pata afterwards. The seed rate was 15 lbs. per acre.

*Germination and Growth.*—All varieties germinated well excepting Californian Dwarf, the germination of which was very defective. The growth was rather poor.

*Weedings and Interculture.*—Three hoeings were done in all.

*Irrigation and Rainfall.*—One irrigation was given after sowings to help in germination. Rainfall during the growing period amounted to 5.49".

*Pests and Diseases.*—Slight attack of Stem borer was noticed in early stages.

*Harvesting.*—Californian Dwarf was harvested on 19th Farwardi 1346 F. (20th February 1937), and the rest were harvested between 1st and 7th Ardibehisht 1346 F. (5th and 11th March 1937).

*Yields.*—The following lay-out plan shows the distribution of varieties in the field as well as the actual yield per plot in lbs.









*Experiment No. 12.—Comparison of Linseed Varieties*

*Object.*—To find out the most profitable variety for the tract.

*Soil.*—Medium black.

*Preparatory tillage.*—Two deep ploughings with Victory plough. Spring harrow and pata each was run three times to level the land.

*Manuring.*—A crop of sann-hemp was ploughed in as green manure.

*Area and Plotting.*—One acre field was divided into 30th plots each measuring  $1/35.8518$  acre in area. The plots were separated from one another by footpath interspaces.

*Sowing.*—Seed was sown behind the cultivator in lines 9" apart on 17th Azar 1346 F. (22nd October 1936) and lightly covered with pata.

*Germination and Growth.*—Germination was good in all varieties. The dates of flowering of different varieties were as follows:—

Local, Pusa H. 21, Pusa H. 68, Pusa H. 55 on 10th Bahman 1346 F. (13th December 1936).

Pusa 124, Pusa T. 12 on 18th Bahman 1346 F. (21st December 1936).

*Irrigation and Rainfall.*—Three light waterings were given in addition to 5. 65" of rainfall.

*Interculture.*—Three hoeings and one weeding were done.

*Pests and Diseases.*—No serious pest was observed.

*Harvesting.*—The crop was harvested between 29th Farwardi 1346 F. and 6th Ardibehisht 1346 F. (2nd and 10th March 1937).

*Yields.*—The following statement and lay-out plan show the distribution of the varieties in the field as well as the actual yield per plot in lbs.



C	D	E	F
1-0	3-8	5-0	10-4



*Observation plot of Various Kharif Crops.*

*Object.*—To grow and observe almost all the miscellaneous Kharif crops in order to study their economics and behaviour.

*Soil.*—Chalka.

*Area and Plotting.*—The field C. 4 was divided into 15 equal plots of  $32' \times 110' = 1/16.5$  acre each in area and 18 plots of  $30' 3'' \times 144' = 1/10$  acre each on two acre field in the newly occupied area.

*Preparatory cultivation.*—Three ploughings and three harrowings were given and then the field was levelled by running a pata.

*Manuring.*—Nil.

*Sowing.*—All crops in C. 4 were sown on the 7th and 8th Shahrewar 1345 F. (13th and 14th July 1936) In newly occupied area sowing was done between 16th Shahrewar 1345 F. (22nd July 1936) and 25th Shahrewar 1345 F. (31st July 1936).

*Germination and Growth.*—Germination was good in all crops, but the subsequent heavy rains completely spoiled Rajgira and did not allow other crops to flourish. Thus growth was not satisfactory.

*Irrigations.*—No watering was given. The crops received about 25.76 inches of rain in the field.

*Weeding and Interculture.*—One to two weedings and two to four hoeings were done in different crops according to necessity.

*Harvesting.*—The crops were harvested as they ripened. The following statement shows the yields and the dates of harvest, etc,



*Miscellaneous Kharif Crop in light Black Soil*

Name of crop	Date of sowing	Date of harvest	YIELD IN LBS.			
			Actual plot yield		Calculated per acre	
			lbs.	ozs.	lbs.	ozs.
Til White	.. 7-10-1345 F.	27-2-1346 F.	..	2	2	1
Til Black	.. 7-10-1345 F.	16-2-1346 F.	2	..	33	..
Ambada Red	.. 7-10-1345 F.	15-3-1346 F.	7	4	119	10
Ambada White	.. 7-10-1345 F.	15-3-1346 F.	2	14	44	3
Mash ..	.. 7-10-1345 F.	22-2-1346 F.	..	14	14	7
Moong ..	.. 7-10-1345 F.	22-2-1346 F.	..	8	8	4
Mot ..	.. 7-10-1345 F.	28-3-1346 F.	5	..	82	8
Ballar ..	.. 7-10-1345 F.	26-3-1346 F.	15	..	247	8
Rajgira ..	.. 7-10-1345 F.	Failure.	..	Failure.		
Kulthi ..	.. 7-10-1345 F.	15-3-1346 F.	7	..	115	8
Kangni ..	.. 8-10-1345 F.	27-2-1346 F.	3	8	57	12
Lachna ..	.. 8-10-1345 F.	27-2-1346 F.	8	12	144	6
Savan ..	.. 8-10-1345 F.	27-2-1346 F.	3	4	28	14
Kodro ..	.. 8-10-1345 F.	27-2-1346 F.	6	..	99	..
Lobia ..	.. 22-10-1345 F.	16-2-1346 F.	3	..	49	8

*Kharif Miscellaneous Crops in Chalka Soil.*

Name of crop	Date of sowing	Date of harvest	YIELDS IN LBS.			
			Actual plot yield		Calculated per acre	
			lbs.	ozs.	lbs.	ozs.
Lachna ..	16-10-1345 F.	15-2-1346 F.	36	..	360	..
Kodro ..	16-10-1345 F.	16-2-1346 F.	63	..	630	..
Savan ..	16-10-1345 F.	11-1-1346 F.	28	4	280	..
Kangni ..	16-10-1345 F.	16-2-1346 F.	18	..	180	..
Rajgira ..	16-10-1345 F.	16-2-1346 F.	10	..	100	..
Til Black ..	16-10-1345 F.	15-2-1346 F.	1	8	15	..
Til White ..	16-10-1345 F.	15-2-1346 F.	..	8	5	..
Ambada White ..	16-10-1345 F.	19-4-1346 F.	1	..	10	..
Ambada Red ..	22-10-1345 F.	19-4-1346 F.	11	..	110	..
Mash ..	22-10-1345 F.	14-1-1346 F.	4	4	42	8
Mot ..	22-10-1345 F.	6-4-1346 F.	13	..	130	..
Moong ..	22-10-1345 F.	15-1-1346 F.	..	4	2	8
Kulthi ..	24-10-1345 F.	11-3-1346 F.	14	8	145	..
Ballar ..	24-10-1345 F.	18-3-1346 F.	46	8	465	..
Lobia ..	24-10-1345 F.	22-3-1346 F.	2	..	20	..
Arhar (Unao early) ..	25-10-1345 F.	19-3-1346 F.	29	..	290	..
Castor ..	25-10-1345 F.	27-6-1346 F.	7	..	70	..
Arhar local ..	25-10-1345 F.	27-6-1346 F.	16	..	160	..

*Observation plot of various Rabi Crops.*

*Object.*—To study the economics and yields of the miscellaneous Rabi crops.

*Soil.*—Medium black.

*Preparatory Tillage.*—The field was well prepared with deep ploughings and harrowings. Tilth was good and seed bed in fine condition at the time of sowing.

*Area and Plotting.*—Twelve plots of  $30' \times 108.9' = 1/13.3$  acre each in area were prepared for single sowings of the crops in an acre field.

*Manuring.*—Nil.

*Sowings.*—Practically all the crops were sown on 17th Azur 1346 F. (22nd October 1936).

*Germination and Growth.*—Germination was good in all crops but after-growth was very poor in some crops. Maize and mustard were failure. Growth of Oats, Kulthi, Safflower and Sunflower was average.

*Irrigation.*—Two irrigations were given in all. The crops received 11. 13" of rainfall.

*Weeding and Interculture.*—Three weedings and hoeings were done.

*Harvesting and Yields.*—The following statement shows the dates of sowing, harvest and the yields.

[Statement.

*Statement showing the dates of sowing, harvest and yields of various  
Rabi crops*

Name of crop	Date of sowing	Date of harvest	YIELD IN LBS.			
			Actual plot yield		Calculated per acre	
			Grain	Straw	Grain	Straw
Oats ..	17-1-1846 F.	30-5-1846 F.	48	..	640	..
Mustard ..	do	Failed.	..	..	..	..
Ajvan ..	do	22-7-1846 F.	5	.	66	2/3
Corriander ..	do	19-5 1846 F.	22	..	293	1/3
Lack ..	do	25-5-1846 F.	13	..	173	1/3
Linseed ..	do	5-6-1846 F.	19	..	253	1/3
Masoor ..	do	25-5-1846 F.	4	..	53	1/3
Kulthi ..	do	25-5-1846 F.	33	..	440	..
Safflower ..	do	5-6-1846 F.	48	..	640	..
Maize ..	do	..	..	211	..	2,811
Sunflower ..	do	10-6-1846 F.	42	..	560	..
Gram ..	do	25-5-1846 F.	30	..	400	..

*Note*—Each crop was sown in a single plot of 1/13.3 acre.

*Observation of Rhizomes, Root and Tuber Crops.*

*Object.*—To study the behaviour of such crops from an economic point of view.

*Soil.*—Chalka.

*Preparatory Tillage.*—Deep ploughings and subsequent harrowings were done and fine deep tilth was produced before sowing.

*Plotting.*—No regular plotting was done. The land in the garden area was used up according to the availability of the various seeds.

*Manuring.*—The plots could not be manured because of the available quantity of farm yard manure not being sufficient, hence sheep folding was resorted to.

*Sowing.*—Ginger rhizomes were dibbled 1' apart in lines 1½' apart on 17th Amerdad 1345 F. (22nd June 1936). Turmeric rhizomes were dibbled 9" to 12" apart in lines 1' apart on 19th Amerdad 1345 F. (24th June 1936). Arvi tubers not being available in the time were sown late on 24th Shahrewar 1345 F. (30th July 1936) one foot apart in lines 1½' apart. The cuttings of sweet potatoes were planted on ridges 2' apart on 28th and 29th Amerdad 1345 F. (3rd and 4th July 1936). Suran and Yams were introduced during the year under review. Suran was sown 3' apart in beds of 12' × 6' Yams were sown on ridges 3' apart on all sides on 6th Shahrewar 1345 F. (12th July 1936). Potato seeds of Italian variety were planted on 19th Azur 1346 F. (24th October 1936).

*Germination and Growth.*—Germination was good and all crops sprouted within ten days of sowing. Growth was satisfactory in all crops excepting potatoes and sweet potatoes.

*Irrigations.*—Nine irrigations each to turmeric, ginger, arvi, six to Suran and Yams, twice to sweet potatoes and 12 irrigations to potatoes, were given.

*Weedings and Interculture.*—Two to seven hoeings and weedings were done in different crops.

*Harvesting.*—Ginger was harvested from 15th to 18th Ardibehisht 1346 F. (19th to 23rd March 1937), Turmeric from 31st Ardibehisht to 6th Khurdad 1346 F. (4th to

10th April 1937), Arvi on 3rd Ardibehisht 1346 F. (7th March 1937), Suran and Yams on 3rd Ardibehisht 1346 F. (7th March 1937), Potatoes on 6th Farwardi 1346 F. (7th February 1937), Sweet potatoes on 19th Dai 1346 F. (23rd November 1936).

*Yields.*—The following statement shows the areas under each crop and the yields obtained.

Name of crop	Area in acres	YIELD IN LBS.		Remarks
		Actual	Per acre	
Turmeric ..	1/10	567	5,670	Cured rhizomes
	..	(cured) 3,282	(cured) 32,820	Fresh rhizomes kept for seed.
Ginger ..	1/11	552.5	6,077.5	Fresh rhizomes only
Arvi ..	1/26.6	317.5	8,413.75	
Sweet Potatoes ..	1/26.6	86	2,293	
Suran (Gujerat) ..	1/121	140	16,940	
Suran (Madras, ..	1/268.3	32	6,453	
Yam ..	1/82.5	146	12,045	
Potatoes ..	1/266	376	2,506.6	
Betel vine ..	3/20	34,363	..	From Bahmon to Thir 1346 F.

*Non-experimental crops.*—Some fodder and general crops were grown in fields not occupied by the Experimental plantations with the object of finding fodder for the cattle, or general study of behaviour, or ploughing in for green manure. The following statement shows the outturn of such crops as well as the area under each.

Name of crop	AREA		ACTUAL OUTTURN IN LBS.			Remarks
	Acres	Gun-tas	Grain	Fodder		
				Green	Dry	
Castor .. ..	..	..	..	..	..	Can be had from E.B.'s section. Kapas.
Cotton .. ..	4	..	506	..	..	
Gram Local .. ..	1	..	122	..	..	
Groundnut Spanish No. 5 ..	1	..	1,014	2,567	..	
Jowar fodder (Kharif) ..	7	23	226	3,706	5,698	Due to heavy and untimely rains, the crop was badly affected. The paddy crop was also attacked by Hispa and Stem borer which affected the yields
Jowar fodder (Rabi) ..	3	..	457	11,407	..	
Jowar (Imphic) Kharif fodder.	1	..	..	2,714	..	
Jowar (Imphic) Seed ..	..	30	75.5	..	483	
Lucerne .. ..	1	..	..	12,413	..	
Paddy No. 263 (Abi) ..	1	30	1,190	..	2,536	
Paddy No. 263 (Tabi) ..	1	27	1,363	..	1,770	
Paddy No. 504 (Abi) ..	..	21	330	..	748	
Paddy No. 504 (Tabi) ..	..	23	627	..	751	
Paddy T.18 (Abi) ..	..	21	315	..	955	
Paddy T.18 (Tabi) ..	..	33	376	..	1,012	
Sann-hemp (green manure)	11	..	..	..	..	Fibre.
Sann-hemp (Seed) ..	2	..	506	..	133	
Maize .. ..	1	23	56	2,605	..	Failure due to heavy rains. do do
Sesamum .. ..	1	..	18	..	..	
Onions .. ..	..	30	3,579	..	4,772	
Garlic .. ..	..	10	96	..	384	

The Cotton Research Botanist used about four acres of land for experiments with cotton and the Economic Botanist used about  $\frac{3}{4}$ th acre for experiment with castor. All the labour, etc., for both the works were supplied by the farm.

*Horticultural activities.*—An area of about 3 acres has been set apart for fruit culture and raising of fruit tree nurseries. A small betel-vine garden has been re-sown last year. The pineapple plantation is flourishing.

*Permanent improvements.*—The levelling of the area of 'D' Section (newly occupied area) was taken in hand, and a good deal of work has been done. The levelling work is still in progress. A new road from the hostel joining the labour quarters road has been constructed. The engine and power crusher were shifted to their permanent position in the shed and a new Hadi Furnace was built in the same shed.

*Drainage.*—In order to stop the seepage water from the canal, open drains were dug wherever necessary.

*Cattle.*—All animals kept in good condition of health. There are 9 pairs of cattle on the Farm, and there have been no changes. All the cattle were inoculated against Rinderpest.

*Manure pits.*—The compost pits have constantly been kept in use. Sufficient manure for the farm needs was manufactured during the year and used.

*Buildings.*—The construction of the Gur boiling shed, which was commenced last year, was completed and was put in use during the year under review.

*Implements.*—The farm is fully equipped with all implements necessary. Various spare parts of the implements were purchased during the year to replace wear and tear.

*Farmers' class.*—A Farmers' Class was started in 1345 F. to afford training in practical agriculture and allied subjects to the members of the families of the cultivators exclusively of the Nizamabad District closely connected with land who wish to take up agriculture as their profession. A two years syllabus was so arranged that the students of the class may come in touch with the



improved methods of practical agriculture so that they may be able to make general improvements in their private farm on their return home.

The First session commenced from the 1st of Amerdad 1345 F. (June 1936) and 6 students were admitted in the 1st year class who continued their study throughout the year.

At the end of the year, in the month of Thir 1346 F. (May 1937) these six students appeared for their first year examination. Out of these all passed successfully and were promoted to the 2nd year class.

The class was finally closed for Summer Vacation during the month of Thir 1346 F.

*Farm demonstration.*—The agricultural activities of the farm were not demonstrated on the farm this year but they were demonstrated on the occasion of the Silver Jubilee celebrations at Nizamabad. The necessary staff labour, cattle and implements were deputed for the demonstration. This incurred an expenditure of nearly Rs. 200.

*Finances.*—Total expenditure during the year under review amounted to Rs. 9,038-4-11 and the income totalled Rs. 834-3-3. A good deal of the farm produce was still lying in the stores waiting disposal at the close of the year.

*Charge and establishment.*—Mr. S. M. Jaffer Kazimi, ably held the charge of the Farm as Superintendent during the year under review.

Mr. Mahbub Ali Khan, remained in charge as Assistant Farm Superintendent, during the year under review. He was on leave from 12th Ardibehisht 1345 F. to 28th Shahrewar 1345 F. and during his absence Mr. G. B. Sharma acted in his place. Mr. G. B. Sharma was relieved of his duty on 29th Ardibehisht 1345 F.

(Sd.) A MAJID,

17-12-46 F.

DEPUTY DIRECTOR OF AGRICULTURE,

*Western Telingana Division,  
Himayatsagar, Hyderabad-Deccan.*

*Statement showing the Rainfall Record at the Experimental Farm, Rudrur, for the year 1345-1346 F.*

Dates	Amerdad	Shah-rewar	Mehir	Aban	Azur	Da1	Bah-mon	Isfan-dar	Far-wardi	Ardi-behish	Khur-dad	Thir
1	0.47	..	0.08	0.02	..	..	..	..	..	..	..	..
2	..	..	0.29	0.07	..	..	..	..	..	..	..	..
3	..	0.60	0.13	..	..	..	..	..	..	..	..	..
4	0.72	0.17	0.11	0.01	..	..	..	..	0.88	..	0.40	..
5	0.01	0.02	..	0.08	..	0.08	..	..	0.02	..	..	..
6	T	..	0.12	..	..	0.04	..	..	..	..	..	..
7	0.04	0.05	0.06	..	..	0.30	..	..	..	..	0.06	..
8	0.01	..	0.16	0.01	..	..	..	..	..	..	..	..
9	0.15	0.28	..	..	..	..	..	..	..	..	..	..
10	..	..	0.11	0.62	..	..	..	..	..	..	..	..
11	0.02	0.40	0.66	0.15	..	0.06	..	..	..	..	..	..
12	1.20	0.11	1.40	..	..	..	..	..	..	0.07	..	..
13	T	0.67	0.57	..	..	..	..	..	..	..	..	..
14	T	0.04	0.30	..	..	..	..	..	..	..	0.06	..
15	T	0.48	..	..	..	..	..	..	..	0.12	0.17	..
16	1.06	0.12	..	0.02	..	0.07	..	..	0.94	..	3.28	..
17	0.26	0.02	..	..	..	2.04	0.07	..	0.75	..	0.08	..
18	0.94	1.94	..	0.11	..	..	..	..	0.02	..	..	..
19	2.22	0.10	..	0.03	..	..	..	..	..	0.32	..	..
20	0.77	0.49	..	..	..	..	..	..	..	..	..	0.15
21	1.06	0.59	..	0.34	..	..	..	..	..	..	..	0.04
22	0.04	T	..	0.02	..	..	..	..	..	0.18	..	..
23	..	..	..	3.52	..	..	..	..	..	0.03	..	..
24	0.42	..	0.22	0.02	0.18	..	0.21	..	..	..	..	..
25	0.17	0.55	1.65	..	0.32	..	..	..	0.16	..	..	..
26	0.10	..	0.60	..	..	..	..	..	..	..	..	..
27	1.28	0.82	0.02	..	..	..	..	..	..	0.13	..	..
28	0.23	0.59	0.07	..	..	..	..	..	..	0.35	..	..
29	0.02	1.13	0.32	..	..	..	..	..	..	0.11	..	..
30	0.18	0.05	0.29	..	0.01	..	..	..	..	..	..	..
31	T	0.14	..	..	..	..	..	..	..	0.12	..	..
	8.15	9.36	7.16	5.02	0.51	2.59	0.28	..	2.27	1.43	4.05	0.19

Total rainfall from 1st. Amerdad 1345 F. to 31st. Thir 1346 F. is=41.01 inches.

*List of Experiments to be tried on the Government  
Experimental Farm, Rudroor, for the year  
1346-1347 Faslî.*

1. Manurial Tests with Sugarcane.
2. Sugarcane Planting Time Experiment.
3. Comparison of Sugarcane Varieties.
4. Comparison of Kharif Jowar Varieties.
5. Comparison of Bajra Varieties.
6. Comparison of Groundnut Varieties.
7. Comparison of Arhar Varieties.
8. Comparison of Tobacco Varieties.
9. Comparison of Wheat Varieties.
10. Comparison of Gram Varieties.
11. Comparison of Rabi Jowar Varieties.
12. Comparison of Linseed Varieties.

*Annual Report of the Government Demonstration Farm,  
Mahbubnagar, for the year 1345-1346 F.*

*Introduction.*—The lands of this Farm were acquired permanently at the end of 1334 F. (1925) and cultivation started in the year 1335 F. (1926). As the lands were mostly uneven they had to be levelled properly for experimental purposes. Experimental work started from the year 1338 F. (1929). As the land used to get submerged under water during the greater part of the year, it was decided to abolish the Farm and consequently it was closed completely by the end of Farwardi 1346 F.

*Situation.*—The Farm was situated towards the eastern side of Mahbubnagar Town, on Hyderabad-Krishna road about 62 miles away from Hyderabad City. It was located in the vicinity of P. W. D. Travellers' and Inspection Bungalows and was about 4 furlongs away from the Railway Station.

*Object.*—This Farm, as is evident from its name, was maintained mainly to test and demonstrate to the ryot of the district, the crops, fertilizers and improved implements, which proved useful for the general condition of the District.

*Soils.*—The lands of the Farm consisted mostly of light chalka of the Telingana type. There was, however an area of about 8 acres consisting of medium black soil (Regur). Alkali soils to the extent of about 10 acres were also found scattered here and there.

*Area.*—Total area of the Farm was 77 acres and 7 ghuntas out of which about 60 acres were cultivable and the remaining area was either uncultivable waste consisting mostly of high lying boulders or low lying depressions. Of the cultivable area about 15 acres were wet lands.

*Sources of Irrigation.*—The chief source of water was from the two wells that existed on the Farm.

*Season and rainfall.*—23.18 inches of rainfall was recorded on the Farm from 1st Amerdad 1345 F. to 25th

Farwardi 1346 F. On account of winding up of the Farm further record was not maintained. Regular monsoon rains started from 15th Amerdad 1345 F. (20th June 1936) and well-spread showers continued during the months of Shahrewar and Mehir. In the month of Aban (September) only 2.78 inches of rainfall was recorded. Month of Azur had still less rain. Afterwards there was a complete break for nearly 3 months which badly affected the yield of Tur, Groundnut, Cotton, Tobacco and other miscellaneous crops. The records that were maintained show that the rainfall was uneven and too low for Mahbubnagar District.

### *Experimental Cropping.*

Details of all the individual experiments conducted and their results are given on the following pages.

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#### *Experiment No. 1.—Comparison of Paddy Varieties (Abi).*

*Object.*—To find out the most high yielding variety of Paddy for the purpose of distribution in the District.

*Soil.*—Medium Paddy soil.

*Preparatory tillage.*—The preparatory operation of tillage was done by levelling the fields from 30th Shahrewar 1345 F. (5th August 1936) to 9th Mehir 1345 F. (15th August 1936).

*Manuring.*—Manure at the rate of 40 cart-loads of Town sweepings per acre was applied from 10th to 14th Shahrewar 1345 F. (16th to 20th July 1936).

*Plotting.*—The field was divided into 48 plots each measuring  $51' \times 15\frac{1}{2}' = 1/55$  acre to allow of 6 replications.

*Sowing.*—Nursery beds were sown with 8 different varieties of paddy seed on 26th Shahrewar 1345 F. (1st August 1936). One month old seedlings were transplanted  $6'' \times 4''$  apart on 26th Mehir 1345 F. (1st September 1936). Gap-filling was done on 9th Aban 1345 F. (14th September 1936).

*Interculture.*—Only one hand weeding was done on 17th Aban 1345 F. (22nd September 1936).

*Rainfall and Irrigation.*—Irrigation was done as required. Crop received 5.15" of rain during the period of its growth.

*Pests and Diseases.*—In advance stage Stem-borer attack became severe. Attack was less on Paddy 539, as compared to other varieties.

*Harvest.*—Different varieties were harvested on different dates as follows:—

Paddy 504 and 541	on 23rd Dai 1346 F. (27th November 1936).
Paddy 80	on 24th Dai 1346 F. (28th November 1936).
Nizamgoad	on 25th Dai 1346 F. (29th November 1936).
Paddy 539	on 26th Dai 1346 F. (30th November 1936).
Pusa T. 18 and 263	on 27th Dai 1346 F. (1st December 1936).
Texenal	on 28th Dai 1346 F. (2nd December 1936).

*Yield.*—All the varieties yielded very low on account of Stem-borer attack.

[Statement.

The following lay-out plan shows the yields in lbs. of the respective varieties:—

*Paddy Varietal Test (Abi) 1345-1346 Fashl.*

	A	B	C	D	E	F	G	H
Grain ..	23	8	24	31	21	26	20	20
Straw ..	45	55	40	46	45	45	40	50
	H	A	B	C	D	E	F	G
Grain ..	19	23	10	25	26	23	24	20
Straw ..	40	40	30	50	55	40	40	50
	G	H	A	B	C	D	E	F
Grain ..	11	13	16	13	26	20	23	24
Straw ..	55	40	40	40	55	40	35	35
	F	G	H	A	B	C	D	F
Grain ..	11	10	11	15	4	19	18	8
Straw ..	60	60	70	45	35	40	30	30
	E	F	G	H	A	B	C	D
Grain ..	10	13	7	11	16	7	19	19
Straw ..	60	40	60	60	35	35	40	42
	D	E	F	G	H	A	B	C
Grain ..	25	20	20	20	17	15	10	25
Straw ..	60	50	45	60	75	45	50	45

Size of each plot =  $51' \times 15\frac{1}{2}' = 1/55$  acre

Replications.—Six

Varieties.—

A=Paddy 504

B=Paddy 541

C=Texenal.

D=Paddy 263

E=Pusa T. 18

F=Paddy 539

G=Nizamgoad

H=Paddy 80.

# SUMMARY OF RESULTS

	MEAN YIELDS IN LBS.								Stand- ard error of treat- ment mean	Critical differ- ence
	A	B	C	D	E	F	G	H		
Per acre	990	473	1,265	1,325.5	962.5	1,078	803	830.5	62.15	186.45
Percentage on general mean	+ 2.2	- 51.1	+ 30.7	+ 36.9	- 0.6	+ 11.4	- 17	- 14.2	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..

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## Conclusion.

D=C > F > H; A > G; E=H=G < B.

A=Paddy 504, B=Paddy 541, C=Texenal, D=Paddy 263, E=Pusa T. 18, F=Paddy 539, G=Nizamgoad, H=Paddy 80.



*Experiment No. 2.—Comparison of Kharif Jowar Varieties.*

*Object.*—To find out the most profitable variety for the District.

*Soil.*—Medium Chalka.

*Preparatory tillage.*—1st ploughing with Victory Plough was done on 20th Thir 1345 F. (25th May 1936). Second ploughing and cross ploughing was done on 19th and 25th Amerdad 1345 F. (24th and 30th June 1936). Harrowing was also done on 25th Amerdad 1345 F. (30th June 1936).

*Manuring.*—Compost at the rate of 30 cart-loads per acre was applied on 5th Thir 1345 F. (10th May 1936).

*Plotting.*—The field was divided into 40 plots each measuring  $60\frac{1}{2}' \times 13\frac{1}{2}' = 3/160$  acre leaving 5' space in between the plots.

*Sowing.*—Eight varieties of Jowar replicated five times were hand dibbled  $18'' \times 9''$  apart on 6th Shahrewar 1345 F. (12th July 1936).

*Germination and growth.*—Germination was good and growth was vigorous. Gap-filling was done on 23rd Shahrewar 1345 F. (29th July 1936) and thinning was done on 29th Shahrewar 1345 F. (4th August 1936).

*After tillage.*—Interculturing was done twice with bullock hoe on 22nd Shahrewar 1345 F. (28th July 1936) and 7th Mehir 1345 F. (13th August 1936). Hand weeding was also done twice on 4th and 24th Mehir 1345 F. (10th and 30th August 1936).

*Irrigation and Rainfall.*—The total amount of rain during the period of growth amounted to 11 inches and 59 cents.

*Pests and Diseases.*—Nothing noteworthy.

*Harvest.*—Five varieties namely Local Yellow, Pucha Junnal, Local White, Cawnpore, and Kodaldani matured early and were harvested on 23rd Azur 1346 F. (28th October 1936). Ramkhel, Illaspuri and Aishpuri were harvested on 2nd Dai 1346 F. (6th November 1936). Ear heads of all the varieties were too heavy to allow the

crop to stand erect. Lodging was more in Kodaldani. 2 to 3 plants were tied together to avoid lodging.

*Yields.*—The following lay-out plan shows the yield in lbs. of each plot.—

	H	G	F	E	D	C	B	A
Grain ..	38	48	39	49	32	40	52	43
Fodder ..	140	140	250	140	140	210	200	220
	A	B	C	D	E	F	G	H
Grain ..	22	55	39	40	52	64	42	46
Fodder ..	140	200	290	180	180	270	150	290
	H	G	F	E	D	C	B	A
Grain ..	44	38	45	53	40	44	53	43
Fodder ..	170	130	240	220	180	270	200	170
	A	B	C	D	E	F	G	H
Grain ..	23	52	35	35	50	41	47	42
Fodder ..	95	140	220	145	160	210	120	100
	H	G	F	E	D	C	B	A
Grain ..	32	29	27	50	30	40	50	29
Fodder ..	140	120	180	140	130	180	125	160

Size of each plot =  $60\frac{1}{2}' \times 13\frac{1}{2}' = 3/160$  acre.

Replications.—Six.

Varieties.—

A=Local Yellow.

B=Pucha Junna.

C=Ramkhel.

D=Local White.

E=Kodaldani

F=Aishpuri.

G=Cawnpore Dodania.

H=Illaspuri.

## SUMMARY OF RESULTS.

MEAN YIELDS IN LBS.										Stand- ard error of treat- ment mean	Critical differ- ence
A	B	C	D	E	F	G	H				
Per acre	.. 1,706.6	2,794.6	2,112.0	1,888.0	2,709.3	2,170.6	2,170.6	2,154.6	2,224.0	155.7	467.1
Percentage on general mean	.. - 23.2	+ 25.6	- 5.0	- 15.1	+ 21.8	- 2.4	- 2.1	- 3.1	..	..	..
Percentage on control	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..

## Conclusion.

B=E > G; F=G=H=C=D=A

A=Local Yellow, B=Pucha Junna, C=Ramkhel, D=Local White, E=Kodaldani, F=Aishpuri, G=Cawnpore Dodania  
H= Illaspuri.

*Experiment No. 3.—Comparison of Groundnut Varieties.*

*Object.*—To find out the most profitable variety of groundnut for the District.

*Soil.*—Medium Chalka.

*Preparatory tillage.*—1st ploughing was done on 21st Thir 1345 F. (26th May 1936). 2nd ploughing and cross ploughing was done on 20th and 28th Amerdad 1345 F. (25th June and 3rd July 1936). The soil was levelled by running the pata.

*Manuring.*—Nil.

*Plotting.*—Field was divided into 42 plots each measuring  $49\frac{1}{2}' \times 16\frac{1}{2}' = \frac{3}{4}$  ghunta.

*Sowing.*—Seven varieties of groundnut replicated six times were hand dibbled  $1' \times 9''$  apart on 7th Shahrewar 1345 F. (13th July 1936). Two seeds were put at each hill. Gap-filling was done on 24th Shahrewar 1345 F. (30th July 1936).

*Interculture.*—Two interculturings with Country hoe were done on 31st Shahrewar 1345 F. (6th August 1936) and 19th Mehri 1345 F. (25th August 1936). Besides this two hand weedings were given once from 5th to 8th Mehri 1345 F. (11th to 14th August 1936) and the second from 2nd to 4th Aban 1345 F. (7th to 9th September 1936).

*Rainfall.*—Early varieties, viz., Bhadegaon, Spanish No. 9, Spanish No. 5 and Small Japan got 11 inches and 19 cents of rainfall during their period of growth. Hebbal, Kanki and Madagaskar varieties received 11 inches and 60 cents of rainfall. Late varieties suffered for want of rain during later part of their growth, i.e., during the month of Aban 1345 F. (September 1936).

*Pests and Diseases.*—Nothing of any importance.

*Harvest.*—Small seeded varieties were harvested on 14th Azar 1346 F. (19th October 1936), and Big-seeded varieties were harvested on 1st Dai 1346 F. (5th November 1936).

*Yields.*—The following lay-out plan shows the yield of different varieties in lbs. per plot.

A	B	D	C	E	F	G
20	23	13	28	16	14	22
30	30	30	33	40	29	30
G	F	E	D	C	B	A
24	20	23	18	31	32	29
33	33	43	32	35	39	30
A	B	D	C	E	F	G
49	58	27	32	24	24	34
60	70	40	45	33	33	40
G	F	E	D	C	B	A
21	17	14	13	21	33	33
36	30	30	37	40	40	36
A	B	D	C	E	F	G
40	25	25	51	28	23	31
40	60	35	78	45	41	38
G	F	E	D	C	B	A
41	20	34	21	40	49	41
48	40	50	40	42	44	40

Dimensions of each plot= $49\frac{1}{2}' \times 16\frac{1}{2}' = \frac{3}{4}$  Gunta  
Replications.—Five.

Varieties.—

A=Spanish Peanut No. 9

B=Spanish Peanut No. 5

C=Small Japan.

D=Madagaskar.

E=Kanki.

F=Hebbal.

G=Bhadegaon.

## SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS.						Stand- ard error of treat- ment mean	Critical differ- ence
	A	B	C	D	E	F	G	
Per acre ..	1,884	1,955	1,804	1,040	1,235	1,048	1,537	412.8
Percentage on general mean	+ 25.7	+ 30.4	+ 20.3	- 30.6	- 17.7	- 30.1	+ 2.5	..
Percentage on control ..	..	..	..	..	..	..	..	..

*Conclusion.*

B > G; A=C > E; G > F; E=F=D

A=Spanish Peanut No. 9, B=Spanish Peanut No. 5, C=Small Japan, D=Madagaskar, E=Kanki, F=Hebbal, G=Bhadegan.

*Experiment No. 4.—Comparison of Bajra Varieties.*

*Object.*—To select the most profitable Bajra varieties for the District.

*Soil.*—Good representative chalka soil.

*Preparatory tillage.*—One ploughing with Victory Plough was done on 21st Amerdad 1345 F. (26th June 1936) and planking was done over it to break the clods on 22nd Amerdad 1345 F. (27th June 1936). Harrowing was done on 1st Shahrewar F. (7th July 1936).

*Manuring.*—30 cart-loads of compost was spread and well mixed in the soil on 27th and 28th Thir 1345 F. (1st and 2nd June 1936).

*Plotting.*—The field was divided into 48 plots each measuring  $13\frac{1}{2}' \times 40\frac{1}{2}' = 1/80$  acre.

*Sowing.*—Seeds of eight varieties replicated six times were hand dibbled  $18'' \times 9''$  apart on 9th Shahrewar 1345 F. (15th July 1936). Thinning to one plant per hill was done on 17th Shahrewar 1345 F. (23rd July 1936). Gap-filling was done on 23rd Shahrewar 1345 F. (29th July 1936).

*Germination and Growth.*—Germination was good and growth uniform.

*Intercultivation.*—Bullock hoe was worked twice, once on 21st Shahrewar 1345 F. (27th July 1936) and the second on 4th Mehir 1345 F. (10th August 1936). One hand weeding was done on 30th Mehir 1345 F. (5th September 1936).

*Rainfall and Irrigation.*—Crop received 11.17 inches of rainfall.

*Pests and Diseases.*—Nothing worth mentioning.

*Harvest.*—Harvesting started on 30th Aban 1345 F. (5th October 1936) and continued up to 10th Azur 1346 F. (15th October 1936). Behar variety was the earliest to be harvested and Akola 32 C and African Bajra were the last.

*Yields.*—The following lay-out plan shows the yield per plot in lbs.:—

Grain	..	A	18	II	30	A	21	H	24	A	24	H	26
Straw	..		140		85		100		60		80		65
Grain	..	B	29	G	22	B	26	G	21	B	27	G	19
Straw	..		100		65		75		55		60		45
Grain	..	C	30	F	32	C	25	F	20	C	28	F	25
Straw	..		120		80		80		45		80		50
Grain	..	D	28	E	23	D	25½	E	24	D	25½	E	26
Straw	..		100		60		58		50		85		65
Grain	..	E	31	D	21	E	22	D	23	E	28	D	28½
Straw	..		70		80		40		60		55		80
Grain	..	F	25	C	27	F	22	C	23	F	25	C	24
Straw	..		60		70		40		55		40		65
Grain	..	G	20	B	25	G	20	B	24	G	20	B	25
Straw	..		40		50		35		40		25		55
Grain	..	II	22	A	15	H	23	A	18	H	18	A	14
Straw	..		80		60		70		60		40		60

Dimensions of each plot =  $40\frac{1}{2}' \times 13\frac{1}{2}' = 1/80$  acre.  
Replication.—Six.

Varieties.—

A=Local.  
B=Akola.  
C=Akola 14 B.  
D=Akola 32 C.  
E=Behar.  
F=Cawnpore Awne.  
G=African Bajra.  
H=Cumboo.



## SUMMARY OF RESULTS

—	MEAN YIELDS IN LBS.								Stand- ard error of treat- ment mean	Critical differ- ence
	A	B	C	D	E	F	G	H		
Per acre	1,904	1,920	2,128	2,024	2,048	1,944	1,774	1,464	112	336
Percentage on general mean	.. + 0.8	.. + 11.7	.. + 6.8	.. + 7.5	.. + 2.1	.. - 6.8	.. - 23.1	.. - 23.1	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..

## Conclusion.

C &gt; G; E=D=F=B=A &gt; H; G=H

A=Local, B=Akola, C=Akola 32 B, D=Akola 32 C, E=Behar, F=Cawnpore Awned, G=African Bajra, H=Cumboo.

*Experiment No. 5.—Comparison of Arhar Varieties.*

*Object.*—To select the most profitable and high yielding variety for the District.

*Soil.*—Light chalka.

*Preparatory tillage.*—Three ploughings were given, first on 26th Thir 1345 F. (31st May 1936), second on 25th Amerdad 1345 F. (30th June 1936) and third on 6th Shahrewar 1345 F. (12th July 1936). Cultivator was worked on 27th Amerdad 1345 F. (2nd July 1936).

*Manuring.*—Nil.

*Plotting.*—Field was divided into sixty plots each measuring  $48\frac{2}{5}' \times 9' = 1/100$  acre.

*Sowing.*—Seeds of different varieties were hand dibbled  $3' \times 1\frac{1}{2}'$  apart in their respective plots on 28th Amerdad 1345 F. (3rd July 1936). Gap-filling was done on 30th Shahrewar 1345 F. (5th August 1936). Thinning to one plant per hill was done on 16th Mehri 1345 F. (22nd August 1936).

*Rainfall and Irrigation.*—The crop received 14.40" of rainfall during the period of its growth, which was not evenly distributed.

*Intercultivation.*—In all, three interculturations were done, first on 22nd Shahrewar 1345 F. (28th July 1936), second on 4th Mehri 1345 F. (10th August 1936) and the third on 25th Mehri 1345 F. (31st August 1936). Only one hand weeding was done on 14th Mehri 1345 F. (20th August 1936).

*Pests and Diseases.*—Nothing noteworthy.

*Harvest.*—Harvesting was done on dates given below. Pusa E was earliest to mature and Pusa T. G., Cawnpore, Pusa A.2 and Pusa 80 were the last.

*Name of Variety.*

*Date of harvest.*

Pusa E.	13th Dai 1346 F. (17th November 1936).
Coimbatore Red	} 3rd to 5th Bahman 1346 F. (6th to 8th December 1936).
Poona Red	
Nizam Tur	
Local Tur	

Nagpur

16th Isfandar 1346 F. (18th January 1937).

Cawnpore

Pusa A. 2

Pusa 80

Pusa T. G.

17th Isfandar 1346 F.  
(19th January 1937).

*Yield.*—Lay-out plan and yield of respective plot is shown as follows:—

		J	I	H	G	F	E	D	C	B	A
Grain ..	..	1 $\frac{3}{4}$	4	2	4 $\frac{1}{2}$	3	4	7 $\frac{3}{4}$	7	5	4 $\frac{3}{4}$
		A	B	C	D	E	F	G	H	I	J
Grain ..	..	$\frac{1}{2}$	N	1	$\frac{1}{4}$	2	1	3 $\frac{3}{4}$	2	9	8 $\frac{1}{4}$
		J	I	H	G	F	E	D	C	B	A
Grain ..	..	2 $\frac{1}{2}$	4	1	$\frac{1}{4}$	2	5	2	8	4	4 $\frac{1}{2}$
		A	B	C	D	E	F	G	H	I	J
Grain ..	..	$\frac{1}{2}$	$\frac{1}{2}$	5	2	9	2	$\frac{3}{4}$	2	4	3 $\frac{1}{2}$
		J	I	H	G	F	E	F	C	B	A
Grain ..	..	$\frac{3}{4}$	4	5	1 $\frac{1}{4}$	2	4	$\frac{1}{2}$	3	N	$\frac{3}{4}$
		A	B	C	D	E	F	G	H	I	J
Grain ..	..	$\frac{1}{2}$	$\frac{1}{2}$	7	$\frac{1}{2}$	3	2	$\frac{1}{2}$	9	4	$\frac{1}{4}$

Dimensions of each plot = 48 2/5' x 9' = 1/100  
Replications.—Six. acre.

Varieties.—

A=Pusa 80.

B=Pusa T.G.

C=Pusa E.

D=Pusa A.2

E=Poona Red.

F=Nizam

G=Nagpur.

H=Local.

I=Coimbatore Red.

J=Cawnpore.

# SUMMARY OF RESULTS.

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		MEAN YIELDS IN POUNDS										Stand- ard error of treat- ment mean	Critical differ- ence
		General mean											
		A	B	C	D	E	F	G	H	I	J		
Per acre	..	183	166	516	216	450	200	183	350	483	283	96.6	289.8
Percentage on general mean	..	-39.6	-45.2	+70.3	-28.7	+48.5	-34.0	-39.6	+15.5	+59.4	-6.6	..	..
Percentage on control	..	..	..	..	..	..	..	..	..	..	..	..	..

## Conclusion.

C > D; I > (A, G); E=H=J=D=F=(A, G)=B

A=Pusa 80, B=Pusa T.G., C=Pusa E, D=Pusa A.2, E=Poonia Red, F=Nizam, G=Nagpur, H=Local I=Coimbatore Red,  
J=Cawnpore.

*Experiment No. 6.—Comparison of Kharif Cotton Varieties.*

*Object.*—To investigate the possibility of growing cotton as a dry crop in light soils of Telingana and to select the most profitable variety.

*Soil.*—Chalka soil.

*Preparatory tillage.*—First ploughing was done on 22nd Amerdad 1345 F. (27th June 1936) and second ploughing was done on 29th Amerdad 1345 F. (4th July 1936) with Victory plough. Soil was kept well stirred by working repeatedly cultivator and country blade harrow.

*Manuring.*—Manuring was done on the 2nd Amerdad 1345 F. (7th June 1936) at the rate of thirty cart-loads of compost per acre.

*Plotting.*—Field was divided into 20 plots each measuring  $66' \times 30' = 1/22$  acre leaving  $1\frac{1}{2}'$  space around the plot.

*Sowing.*—Five varieties replicated four times were hand dibbled at  $18'' \times 12''$  apart on 21st Mehira 1345 F. (27th August 1936). Three to four seeds were dibbled at each hill to start with. Gap-filling was done on 2nd Aban 1345 F. (7th September 1937) and thinning to one plant at each hill was done on 17th Aban 1345 F. (22nd September 1936).

*Interculture.*—The field was hand weeded on 17th and 18th Aban 1345 F. (22nd and 23rd September 1936). Interculturing with country hoe and Planet junior cultivator was done on 6th and 22nd Azar 1346 F. (11th and 27th October 1936).

*Rainfall and Irrigation.*—Crop received 5.85" of rainfall during the period of its growth. Continuous break of three months affected the crop very badly. The low yields may be attributed to long drought and late sowing. Parbhani-American variety, however, does not seem to have been affected by these factors.

*Pests and Diseases.*—In the early stages no pest was noticed but during the period of third and fourth picking Red Cotton Bug was noticed.

*Harvesting.*—Parbhani-American variety was picked four times, and rest of the varieties were picked 3 times.

Parbhani-American (1st picking) on 8th Isfandar 1346 F. (10th January 1937).

Do (2nd do ) on 29th Isfandar 1346 F. (31st January 1937).

Do (3rd do ) on 10th Farwardi 1346 F. (11th February 1937).

Do (4th do ) on 27th Farwardi 1346 F. (28th February 1937).

Gaorani No. 4 (1st picking) on 9th Isfandar 1346 F. (11th January 1937).

Do (2nd do ) on 6th Farwardi 1346 F. (7th February 1937).

Do (3rd do ) on 28th Farwardi 1346 F. (1st March 1937).

Gaorani No. 6 (1st picking) on 9th Isfandar 1346 F. (11th January 1937).

Do (2nd do ) on 6th Farwardi 1346 F. (7th February 1937).

Do (3rd do ) on 29th Farwardi 1346 F. (2nd March 1937).

Gaorani No. 12 (1st picking) on 10th Isfandar 1346 F. (12th January 1937).

Do (2nd do ) on 7th Farwardi 1346 F. (8th February 1937).

Do (3rd do ) on 28th Farwardi 1346 F. (1st March 1937).

Local (1st picking) on 10th Isfandar 1346 F. (12th January 1937).

Do (2nd do ) on 7th Farwardi 1346 F. (8th February 1937).

Do (3rd do ) on 29th Farwardi 1346 F. (2nd March 1937).

*Yields.*—The following lay-out plan shows the yield of seed cotton in lbs.:—

	E	D	C	A	B	E	D	C	B	A
Kapas ..	16 $\frac{1}{2}$	31 $\frac{1}{4}$	17 $\frac{1}{2}$	13 $\frac{1}{2}$	7 $\frac{3}{4}$	17 $\frac{1}{2}$	22 $\frac{3}{4}$	20	10 $\frac{1}{2}$	12 $\frac{1}{2}$
	A	B	D	C	E	B	A	D	C	E
Kapas ..	13 $\frac{1}{2}$	6 $\frac{3}{4}$	48 $\frac{1}{2}$	16	15	12 $\frac{1}{2}$	17 $\frac{1}{2}$	44 $\frac{1}{2}$	25	13

Dimensions of each plot = 30' × 66' = 1/22 acre.

Replications Four.

Varieties.—

A = Gaorani No. 4

B = Gaorani No. 6

C = Gaorani No. 12

D = Parbhani American.

E = Local.

#### SUMMARY OF RESULTS.

	MEAN YIELDS IN LBS					General mean	Standard error of treatment mean	Critical difference
	A	B	C	D	E			
Per acre	313.5	206.14	431.04	808.5	341	431.2	64.24	192.72
Percentage on general mean	- 27.3	- 52.2	+ 0.1	+ 87.5	- 20.9	..	..	..
Percentage on control ..	..	..	..	..	..	..	..	..

*Conclusion.*

A = D > C > B ; E = A = B.

A = Gaorani No. 4, B = Gaorani No. 6, C = Gaorani No. 12, D = Parbhani American, E = Local,

*Experiment No. 7.—Comparison of Tobacco Varieties.*

*Object.*—To find out the most suitable variety of tobacco for Mahbubnagar District.

*Soil.*—Chalka.

*Preparatory tillage.*—Two ploughings were done on 23rd Amerdad 1345 F. (28th June 1936) and 16th Shahrewar 1345 F. (22nd July 1936). A third ploughing was also given on 3rd Aban 1345 F. (8th September 1936) after manuring. Bakhar and cultivator were worked on 5th Mehir 1345 F. (11th August 1936) and 26th Mehir 1345 F. (1st September 1936) respectively.

*Manuring.*—Compost at the rate of 20 cart-loads per acre was applied from 1st to 5th Mehir 1345 F. (7th to 11th August 1936).

*Plotting.*—Field was divided into 20 plots measuring  $14' \times 124' = 1/25$  acre each.

*Sowing.*—Transplanting of 4 varieties of tobacco seedlings 4 weeks old was done on 5th and 6th Aban 1345 F. (10th and 11th September 1936). Sowing was done  $2' \times 2'$  apart. Hand watering was done as there was no rain after transplanting. Plotting was done originally for five replications, but 3 replications could not be sown for want of seedlings. Rest of the area was sown with Guntur variety as a general crop.

*Growth.*—Growth was rather poor in the beginning but later on it revived. Suckering was done on 13th and 26th Dai 1346 F. (17th and 30th November 1936).

*Interculture.*—Two interculturings with bullock hoe were given on 4th and 22nd Azur 1346 F. (9th and 27th October 1936) and one hand weeding was done from 4th to 6th Dai 1346 F. (8th to 10th November 1936).

*Irrigation and Rainfall.*—During the period of growth total rainfall amounted to 6.69 inches. Continuous break of rain for 3 months affected the crop to a great extent. No irrigation was given except for hand watering after transplantation.

*Pests and Diseases.*—Nothing of any importance.

*Harvest.*—Crop was harvested on the following dates as the varieties matured.



Name of variety.		Date of harvest.	
1. Pusa H.177	..	17-4-1346 F.	(19-1-1937).
2. Adcock	..	17-4-1346 F.	(19-1-1937).
3. Pusa T.18	..	24-4-1346 F.	(26-1-1937).
4. Guntur	..	8-5-1346 F.	( 9-2-1937).

Curing was done by country method.

*Yields.*—The following plan shows the lay-out and yields of different varieties. Weights of green as well as cured leaves are given. Calculation is based on dry weights.

C	D	B	A	C	D	B	A	D	B	A	C	
120	168	212	240	290	254	..	290	250	224	260	252	Green
18	22	26	28	29	33	..	34	32	28	30	26	Dry

Dimensions of each plot= $14' \times 124' = 1\frac{1}{25}$  acre.

Replications.—Three.

Varieties.

A=Guntur.

B=Adcock.

C=Pusa T. 18

D=Pusa H. 177.

#### SUMMARY OF RESULTS.

		MEAN YIELDS IN LBS.				General mean	Stand-ard error of treat-ment mean	Critical difference
		A	B	C	D			
Per acre	..	767.0	425	567	725	625	145.75	437.25
Percentage on general mean.	+ 22.7	— 32	—9.2	+ 16	..	..	..	..
Percentage on control	..	..	..	..	..	..	..	..

*Conclusion.*

A=D=C=B.

*Observation plot of Miscellaneous Kharif Crops.*

*Object.*—To grow and observe almost all the miscellaneous Kharif crops in Telingana tract, to study their economics and yields.

*Preparatory tillage.*—Two ploughings were given, first on 22nd Amerdad 1345 F. (27th June 1936 and second on 20th Shahrewar 1345 F. (26th July 1936). Discing was done on 1st Amerdad 1345 F. (6th June 1936). The field was harrowed on 29th Amerdad 1345 F. (4th July 1936) and 21st Shahrewar 1345 F. (27th July 1936).

*Manuring.*—The field was manured at 30 cart-loads per acre from 24th to 26th Thir 1345 F. (29th to 31st May 1936).

*Plotting.*—The field was divided into 124 plots each measuring  $30' \times 9' = 1/160$  acre.

*Sowing.*—Seeds of different crops were sown on 24th Shahrewar 1345 F. (30th July 1936).

*Intercultivations.*—One hand weeding was done between 20th and 26th Mehir 1345 F. (26th August and 1st September 1936). Four times Norcross and cultivator were done as required.

*Harvesting.*—Different crops were harvested on different dates as they matured.

*Yields.*—The following lay-out plan shows the yield of each plot in lbs.

Miscellaneous crops Kharif 1945-1946 *Pushi.*

	Y	X	W	S	R	T	U	V	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A	R	S	T	U	V	X	
Grain	$\frac{1}{2}$	3	4	1	1	$2\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$	2	3	$\frac{1}{2}$	$\frac{1}{2}$	..	..	$1\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	..	$\frac{1}{2}$	1	5	5	1	$\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{2}$	$\frac{3}{4}$	6	
Straw	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	20	..	..	..	..	..	..	..
Grain	A	B	C	D	E	F	G	H	I	J	K	M	L	N	O	P	Q	R	S	T	U	V	W	X	Y	M	N	O	P	Q	W	
Straw	5	4	1	N	..	N	N	$\frac{1}{2}$	$1\frac{1}{2}$	..	..	$\frac{1}{2}$	..	3	1	$1\frac{1}{2}$	$\frac{3}{4}$	1	$\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{2}$	1	$3\frac{1}{2}$	6	$\frac{3}{4}$	$\frac{1}{2}$	3	2	1	$\frac{3}{4}$	$3\frac{1}{2}$	
Grain	20	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Straw	Y	X	W	S	R	T	U	V	Q	P	O	N	L	M	I	J	I	H	G	F	E	D	C	B	A	G	H	I	J	K	L	
Grain	$\frac{1}{2}$	3	$3\frac{1}{2}$	1	1	$2\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	2	3	..	..	$\frac{1}{2}$	..	$1\frac{1}{2}$	$\frac{1}{2}$	N	$\frac{1}{2}$	..	$\frac{1}{2}$	1	13	16	N	$\frac{1}{2}$	$1\frac{1}{2}$	N	..	..	..
Straw	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	20	..	..	..	..	..	..	..
Grain	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	A	B	C	D	E	F	
Straw	5	3	1	N	..	$\frac{1}{2}$	N	$\frac{1}{2}$	$1\frac{1}{2}$	..	..	..	$\frac{1}{2}$	3	2	$1\frac{1}{2}$	$\frac{3}{4}$	1	$\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{2}$	1	$3\frac{1}{2}$	7	$1\frac{1}{2}$	6	4	$1\frac{1}{2}$	$\frac{1}{2}$	N		
Grain	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	10	..	..	..	..
Straw	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Dimensions of each plot =  $30' \times 9' = 1\frac{1}{4}$  gunta.

C = Ragi.

B = Sawan.

A = Kangni.

F = Mung.

E = Rala.

D = Kodro.

I = Lobia Red.

H = U'did

G = Balar

L = Moth.

K = Lobia White.

J = Beans.

O = Til Red.

N = Sannhemp.

M = Til White.

R = Soya beans large yellow.

Q = Til Black.

P = Jute.

U = Soya beans small yellow.

T = Soya beans large brown.

S = Soya beans small yellow.

V = Soya beans small yellow.

W = Rajzira.

X = Sunflower.

Y = Amkoda.



*Permanent improvements.*—No work of this kind was undertaken this year except repairs of minor type to roads, sheds and fencing.

*Cattle.*—Live-stock remained in good condition throughout the year. No disease or ailment of any importance was observed and there were no deaths. Total strength was ten pairs of animals, out of which there were eight pairs of bullocks and 2 pairs of he-buffaloes.

*Compost pits.*—Compost making according to Indore method continued during the year under review. There were 15 pits in all and about 405 cart-loads of compost was prepared.

*Implements and machinery.*—Except renewal of parts no new implements were purchased. The two Oil Engines with pumps, bullock chaff-cutter and the other implements were kept in running order.

*Finances.*—The working expenditure of the Farm during the year (from 1st Amerdad 1345 F. to the end of Farwardi 1346 F., i.e., for 9 months) amounted to Rs. 4,414-10-10. This amount includes the expenses incurred for the winding up of the Farm and transferring machinery, implements, etc., to different places. Total income for 9 months was Rs. 5,131-5-7 which has been credited to the District Treasury. Sum of Rs. 1,075 realised from the sale of Farm stock at the time of the dispersal of the Farm is not included in the above figure.

*Charge and establishment.*—Mr. Syed Hamid Ali remained in charge of the Farm up to 28th Mehir 1345 F. when Mr. Abdul Haq took over charge from him and continued to work as Farm Superintendent till the Farm closed. Mr. Syed Hamid Ali was on privilege leave from 30th Thir to 13th Shahrewar 1345 F. when Mr. Prithiviraj, Agricultural Officer, Mahbubnagar, acted for him.

*Abolition of the Farm.*—Orders for abolition of this Farm were received in the month of Azur 1346 F. It was not possible to close the Farm just then as some crops like castor, Arhar, cotton and Tobacco were still standing in the fields. As it was expected that castor crop will not be harvested before the end of Farwardi, sanction had to be obtained to extend the period to the end of that month.

The Farm implements, machinery, cattle and furniture were sent to different farms and sections in this division where they were needed. Seeds were sold locally in market. The lands, buildings, and fencing of the farm were handed over to the Revenue Department for sale. The staff also was sent to different districts where required. Thus the Farm was closed finally by the end of Farwardi 1346 F. February 1937).

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*Himayatsagar, Hyderabad-Deccan.*

*Statement showing the Rainfall Record at the Government Demonstration Farm, Mahbubnagar, for the Year 1345-1346 Fasli.*

*1st Amardad 1345 Fasli to 25th Farwardi 1346 Fasli.*

Dates	Amerdad	Shah-rewar	Mehir	Aban	Azur	Dai	Bah-man	Isfan-dar	Far-wardi
1	..	..	0.24	0.14	..	..	..	..	..
2	..	0.26	..	0.56	..	..	..	..	..
3	..	0.60	..	0.02	..	0.32	..	..	..
4	0.18	..	..	..	..	0.01	..	..	..
5	0.01	..	0.16	..	..	0.02	..	..	..
6	..	..	..	..	..	0.15	..	..	..
7	..	..	..	..	..	0.71	..	..	..
8	..	..	..	..	..	..	..	..	..
9	..	0.25	..	..	0.02	..	..	..	..
10	..	0.45	0.40	..	..	0.10	..	..	..
11	..	0.15	0.50	0.10	..	..	..	..	..
12	..	1.05	..	0.15	..	..	..	..	..
13	..	..	0.97	0.05	..	..	..	..	..
14	..	..	0.18	..	..	..	..	..	..
15	0.65	0.20	..	..	..	..	..	..	2.15
16	2.30	0.04	0.78	..	..	..	..	..	..
17	1.37	0.10	..	0.18	..	0.40	..	..	..
18	..	0.10	..	..	..	0.24	..	..	..
19	0.07	..	..	..	0.37	..	..	..	..
20	0.14	..	..	..	..	..	..	..	..
21	1.32	..	..	..	..	..	..	..	0.14
22	..	..	0.45	..	..	..	..	..	..
23	0.45	0.32	0.10	0.15	..	..	..	..	..
24	..	..	..	0.46	0.03	..	..	..	..
25	..	0.60	0.15	0.03	..	..	..	..	..
26	..	..	..	0.94	..	..	..	..	..
27	..	1.20	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..
Total	6.49	5.32	3.93	2.78	0.42	1.95	..	..	2.29

Total rainfall from Amerdad 1345 F. to 25th Farwardi 1346 F. = 23.18"

*Report on the Cultural Experiments conducted in the deep Black Soil (Regur) at Ebrahimpet during the year 1345-1346 F.*

*Introduction.*—Cultural Experiments were started in this area during the Tabi season of the year 1342-43 F. (1934). The lands had been resigned by the cultivators some four years previously stating that they could not grow any profitable crops on this land under irrigation.

*Situation.*—These plots are situated on the eastern side of the village Ebrahimpet, about 2 miles to the west of Borlum, the headquarters of the Banswada Taluka, on the loop road from Durki to Tilmalapur. It is about 16 miles Rudrur Farm and about 31 miles from Nizamabad Railway Station on H.E.H. the Nizam's Metre Gauge Railways.

*Object.*—The object of these experimental plots had been to investigate the possibilities of raising profitable crops on deep black (Regur) soils under irrigated conditions.

*Area.*—Total area of these plots is about 5 acres. The whole of this area has been placed under cultivation.

*Soils.*—Deep black cotton soils (Regur) with a gradual slope from East to West.

*Sources of Irrigation.*—A distributary of the Nizam-sagar canal commands the area and supplies water throughout the year.

*Drainage.*—There is a good general slope from East to West and an old natural drain lies on the Western side and takes off excess of water.

*Season.*—Independent records of rainfall and temperature were not kept. The seasonal conditions may therefore be considered to have been about the same as at Rudrur.

*Experimental cropping.*—In addition to Abi Paddy, small plots were grown under Cotton, Maize, Seasmum, Sann-hemp, Turmeric, Arhar and Groundnut in Kharif season. In Rabi season, Tabi Paddy, Wheat, Gram, Onions, Garlic, Linseed, and Safflower crops were grown. Small plots of sugarcane grew throughout the year. The details of the cropping are given below.



*Experiment No. 1.—Observation crop of Abi Paddy.*

*Area.*—About 98 ghuntas (40 ghuntas=1 acre). The area was divided into three parts of 50 ghuntas, 42 ghuntas and 6 ghuntas, and Paddy 504, Paddy 263 and Pusa T.18 were sown respectively.

*Preparatory tillage.*—Four ploughings and three puddlings were done during the months of Amerdad and Shahrewar 1345 F. (June to July 1936).

*Sowing.*—Single seedlings of paddy 504, 263 and Pusa T.18 were transplanted about 6"×4" apart from 6th Shahrewar to 17th Mehri 1345 F. (12th July to 23rd August 1936).

*Weeding and Interculture.*—One hand weeding was given in all.

*Irrigation and Rainfall.*—Irrigations were applied as necessary.

*Growth.*—The growth of the crop was not so good as last year. The plants attained a height of about 1½' on an average and the tillering was not fair.

*Pests and Diseases.*—Hispa and Stem-borer attacked very badly. Bagging against Hispa was done and the Borer-attacked plants were uprooted and burnt.

*Harvesting.*—The three varieties Pusa T.18, Paddy 263 and Paddy 504 were harvested on 20th Azar, 9th Dai, and 11th Dai 1346 F. (25th October, 13th and 15th November 1936) respectively.

*Yields.*—The yields of Paddy No. 504, Paddy 263, and Pusa T.18 amounted to 97 lbs., 122 lbs. and 30 lbs. respectively which when calculated per acre amount to 78 lbs., 120 lbs. and 200 lbs. respectively.

*Experiment No. 2.—Observation Crop of Tabi Paddy.*

*Area.*—About 98 ghuntas (40 ghuntas=1 acre). The same land on which Paddy was grown in Abi season. The plot was divided into three parts. The area under Paddy 504 was about 50 ghuntas that under Paddy No. 263 about 42 ghuntas and under Pusa T.18 was about 6 ghuntas.

*Preparatory tillage.*—Two puddlings were done in the month of Bahman 1346 F. (January 1937).

*Sowing.*—Single seedlings of Paddy 504 and Paddy 263 were transplanted about 6"×4" apart between 24th Isfandar and 5th Farwardi 1346 F. (26th January and 6th February 1937). Pusa T.18 was sown on 21st Isfandar 1346 F. (23rd January 1937).

*Weedings and Interculture.*—Only two weedings were done.

*Irrigation and Rainfall.*—No records of rainfall were maintained. Flow irrigation was applied as necessary.

*Growth.*—The crop was average and attained the height of about 2'.

*Harvesting.*—Harvesting was done between 14th Khurdad and 14th Thir 1346 F. (18th April and 19th May 1937). Just before harvest the crop was damaged very badly by heavy rain accompanied by stormy wind.

*Yields.*—The yields collected for Paddy 504 amounted to 441 lbs. of grain, that of Paddy 263 was 847 lbs., of grain and Pusa T.18 was 142 lbs. The acre yield of Paddy 504, Paddy 263, and Pusa T.18 is calculated at 350 lbs., 1,442 lbs., and 960 lbs., respectively.

### *Experiment No. 3.—Observation of the behaviour of Kharif Crops.*

One cereal.—Maize.

One Pulse.—Arhar.

Two Oil-seeds.—Til and Groundnut.

One fibre crop.—Cotton.

One Vegetable crop.—Turmeric.

One Green Manure Crop.—San-hemp.

Total seven different crops were grown on plots of varying sizes in Kharif season on the same land on which Rabi crops were grown in the previous season. The land was well prepared for sowing according to the individual requirements of the various crops. No manure was applied to any of the crops.

General growth of the crops was fair. The Maize crop suffered badly due to heavy rains, and turned out to be a failure. Turmeric yielded better as compared to other crops.

Some of the more important records collected about the various crops are tabulated in the statement below:—

*Kharif crops 1346 Fasli.*

Name of crop	Area in ghuntas	Date of sowing	No. of waterings	Inter-cultures	Date of harvesting	Actual yields in lbs.	Calculated acre yield in lbs.
1. Maize ..	5	25-9-1345 F.	..	5	5-1-1346 F.	..	..
2. Arhar ..	5	2-10-1345 F.	..	11	25-3-1346 F.	80	640
3. Til (White)	5	23-10-1345 F.	..	10	23-1-1346 F.	2	16
4. Cotton ..	5	8-10-1345 F.	4	13	21-2-1346 F.	..	..
5. Turmeric ..	5	5-10-1345 F.	7	14	13-6-1346 F.	120	960
6. Groundnut	5	23-9-1345 F.	..	4	14-1-1346 F.	26	208

*Experiment No. 4.—Observation of the behaviour of lightly irrigated Rabi crops.*

Two cereals, i.e., Wheat and Gram.

Two oil-seeds, i.e., Linseed and Karad.

Two bulb crops, i.e., Onions and Garlic.

Six different crops were grown on plots of varying sizes in Rabi season. The land was well prepared for sowings according to the individual requirements of the various crops.

The general growth of the crops was average.

Wheat crop was badly damaged by Field rats which lowered down the yields considerably.

Some of the more important records collected about the various crops are tabulated in the following statement:—

*Rabi crops 1346 Fasli.*

Name of crop	Area in ghuntas	Date of sowing	No. of waterings	Inter-cultures	Date of harvesting	Actual yield in lbs.	Calculated acre yield in lbs.
1. Wheat Pusa	2.5	15-1-1346 F.	..	4	19-4-1346 F.	6	96
2. Gram ..	6	27-1-1346 F.	1	7	18-5-1346 F.	62	413.3
3. Linseed ..	2.5	16-1-1346 F.	..	5	29-4-1346 F.	18	288
4. Karad ..	5	18-1-1346 F.	1	3	25-5-1346 F.	34	272
5. Onions ..	2.5	11-2-1346 F.	6	8	12-6-1346 F.	492	7,872
6. Garlic ..	2.5	12-2-1346 F.	7	7	1-7-1346 F.	14.5	282

*Experiment No. 5.—Observation of the behaviour of Sugarcane Crop.*

*Area.*—Three varieties of sugarcane were grown.

The area under each was as follows:—

Co.213—51'×20'=1/42.7 acre.

Co.290—51'×44'=1/19.4 acre.

P.O.J.2878—51'×44'=1/19.4 acre.

*Preparatory tillage.*—Two deep ploughings followed by harrowings and running pata were done to bring the soil in fine tilth. Trenches were made 4' apart with Victory Plough, Hyder Trencher and Manual labour.

*Manuring.*—Sann-hemp was ploughed in as green manure in the previous Kharif season. In addition to this Castor cake at 3,200 lbs. per acre was applied in two equal doses.

*Planting.*—The sets of all the three varieties were placed end to end in the middle of the trench about 2 inches deep with eye-beds sideways on 5th and 6th Isfandar 1345 F. (8th and 9th January 1936).

*Irrigation and Rainfall.*—In all 12 irrigations were given. No records of rainfall were maintained.

*Weeding and Interculture.*—3 earthings, 8 hoeings and two weedings were done.

*Growth.*—The growth of the crop was regarded on the whole as an average.

*Pests and Diseases.*—Nothing noteworthy.

*Harvesting.*—The canes of Co.213, Co.290 and P.O.J. 2878 were transported to Rudrur, crushed and turned into gur on the Farm.

*Yields.*—The yields of the stripped cane and gur are shown below:—

Variety	ACTUAL YIELD IN LBS.		CALCULATED ACRE YIELD IN LBS.	
	Cane	Gur	Cane	Gur
Co. 213 .. ..	501	55	21,319	2,340
Co. 290 .. ..	2,354	282	45,709	5,479
P.O.J. 2878 ..	1,743	207	33,845	4,019

*Other crops.*—Lucerne continued growing in the 2 ghuntas plot in which it was sown. The plants never exhibited a healthy look. Four cuttings were taken during the year and each cutting weighed about 15 lbs. of green fodder.

The guinea-grass stools have become well established on the water channels. A small plot about one ghunta in area was planted solely with this grass and it has fairly established. Fair growth has been made and some cuttings also taken and fed to cattle.

*General.*—The bullocks and implements for the work on this farm were found from the Agricultural Experimental Farm, Rudrur, whenever needed. Labour was always found locally.

A Kamgar from the Rudrur Farm was stationed on these plots to carry out the work under instructions of the Superintendent, Rudrur Farm, who visits the place as often as necessary.

The results of Turmeric and Sugarcane crops are promising. Now it is becoming advisable to form a proper experimental scheme and continue the experimental plots for future study on well-defined lines with proper staff, etc., which is obviously necessary for the conduct of such work.

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*Report on the Experiments conducted in the Silted Area  
in Rampur Village for the year 1345-1346 F.*

*Introduction.*— The cultural experiments on this silted area were started in Tabi season of 1342 F. with the co-operation of the cultivators holding patta rights on this land. Up to the year 1343-1344 F. something or the other kept on hindering in the satisfactory progress of the work. The ownership of the land by two patta holders was a chief hinderance. The difficulty was managed last year by getting the patta rights transferred to one cultivator. This arrangement enabled the land to be laid out in proper 10 ghunta plots, which have been levelled in themselves. The present owner is interested in the work and carries out the instruction with proper care.

*Object.*—To investigate the possibilities of cultivating the silted and water-logged areas under Mahbubnahr with a view of raising profitable crops.

*Situation.*—The area is situated just on the side of Mahbubnahr in the tank-bed of the village Rampur on the southern side of Medak-Sangareddy road about 5 miles to the south-west of Medak town.

*Soil.*—The area is badly silted with deposits brought down by irrigation water flowing in the Mahbubnahr year after year. The silt consists of very fine clay textured grains with a mucilaginous touch when wet.

*Area.*—The area of these plots is about 4 acres, which has been laid out into shapely plots.

*Source of Irrigation.*—Mahbubnahr passes on the side of the experimental plots and supplies water for irrigation.

*Drainage.*—Though the area lies near the head of the distributary, unfortunately it is not very well drained. This area is also liable to inundation by the overflow of water from the waste sluice of Mahbubnahr during the time of floods and heavy rains, and therefore, gets more

heavily silted than any other areas in the vicinity. A dam has been constructed on the canal side last year to save the plots from the direct inflow of inundatory water with the object of saving the crop from being washed off.

*Experimental Cropping.*—Cropping of the area was enthusiastically carried out by the present pattedar. The results obtained are reported in the following pages.

*Experiment No. 1.*—*Determination of the effect of the addition of organic matter in the shape of forest leaves (porka) in Tabi season only following a crop of ordinary Abi Paddy.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre. .

### ABI CROPPING.

*Preparatory Tillage.*—Two ploughings were given from 22nd to 25th Amerdad 1345 F. (27th June to 30th June 1936) and from 1st to 3rd Shahrewar 1345 F. (7th to 9th July 1936) each followed by the working of the Jamboo.

*Manuring.*—Two cart-loads (1 cart-load = 800 lbs. approximately) of farm yard manure were applied.

*Sowing.*—Transplanting of seedlings of Texinal variety of paddy was done on 3rd Shahrewar 1345 F. (9th July 1936).

*Germination and Growth.*—Owing to the inundation of the area as a result of heavy waste water from the canal, the dam gave way on 19th Shahrewar 1345 F. (25th July 1936) and the whole crop was submerged under water, due to which reason, the crop suffered heavily.

*Weeding and Interculture.*—One weeding was done on 5th Mehir 1345 F. (11th August 1936).

*Pests and Diseases.*—There was a light attack of Hispa.

*Harvesting and Yields.*—Due to fresh levelling of the field and the Hispa attack the crop did not thrive well.



However, the crop was harvested on 30th Azur 1346 F. (25th October 1936) and yielded 130 lbs. of grain and 200 lbs. of straw, which when calculated per acre amounts to 520 lbs. of grain and 800 lbs. of straw.

### TABI CROPPING.

*Preparatory Tillage.*—Three ploughings were given from 25th Bahman 1346 F. (28th December 1936) to 1st Isfandar 1346 F. (3rd January 1937) followed by two times working of Jamboo from 1st to 6th Isfandar 1346 F. (3rd to 8th January 1937). Due to inavailability of forest leaves (porka) farm yard manure at 20 cart-loads per acre was added on 4th Isfandar 1346 F. (6th January 1937).

*Sowings.*—Seedlings of “Raj-hansal” variety of paddy were transplanted on 6th Isfandar 1346 F. (8th January 1937).

*Weeding and Interculture.*—Two hand weedings were done on 3rd Farwardi 1346 F. and 25th Farwardi 1346 F. (4th and 26th February 1937).

*Germination and Growth.*—Due to fresh levelling of the field and inundation of the area the crop did not prosper.

*Harvesting and Yields.*—The crop was harvested on 14th Khurdad 1346 F. (18th April 1937) and yielded 124 lbs. of grain and 300 lbs. of straw, which calculated per acre amounts to 496 lbs. of grain and 1,200 lbs. of straw.

*Experiment No. 2.*—Observation of the effect of green manuring in *Abi* season on the following *Tabi* season.

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

### ABI CROPPING.

*Preparatory Tillage.*—Two ploughings were done from 29th to 31st Thir 1345 F. (3rd to 5th June 1936).

*Sowing.*—Seed of sann-hemp was broadcast on 5th Amerdad 1345 F. (10th June 1936) at 60 lbs. per acre followed by a ploughing to mix the seed in soil.

*Germination and Growth.*—The germination was good and the crop was making fair growth. But on 19th Shahrewar 1345 F. (25th July 1936), the plot was inundated with flow of waste water from the canal, which badly affected the crop.

*Harvesting.*—The crop was ploughed in on 27th Aban 1345 F. (27th October 1936).

### TABI CROPPING.

*Preparatory Tillage.*—The land was prepared by ploughing twice followed by the working of Jamboo between 17th and 18th Isfandar 1346 F. (19th and 20th January 1937).

*Manuring.*—No manure was applied.

*Sowing.*—Sprouted seed of paddy No. 263 was sown broadcast on 18th Isfandar 1346 F. (20th January 1937).

*Germination and Growth.*—The germination was good and the growth satisfactory.

*Weeding and Interculture.*—One weeding was done on 25th Farwardi 1346 F. (26th February 1937).

*Harvesting.*—Due to stormy weather and heavy rains on 29th Ardibehisht 1346 F. (2nd April 1937), a severe damage was done to the crop as a whole, resulting in the total failure of the crop.

*Experiment No. 3.*—*Observation of the effect of green manuring in Tabi season in the following Abi crop.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

### ABI CROPPING.

*Preparatory Tillage.*—The plot was ploughed twice followed by the working of Jamboo from 22nd Amerdad to 6th Shahrewar 1345 F. (27th June to 12th July 1936).

*Manuring.*—No manure was given except burying in of a crop of sann-hemp in the previous tabi season.

*Sowing.*—Sprouted seeds of Texinal variety of paddy were broadcast on 8th Shahrewar 1345 F. (14th July 1936).

*Weeding and Interculture.*—One weeding was done on 30th Mehir 1345 F. (5th September 1936).

*Germination and Growth.*—Due to the fresh levelling and the inundation of the heavy rains of 20th Shahrewar 1345 F. (4th August 1936), the crop was affected very badly.

*Harvesting.*—On 1st Dai 1346 F. (5th November 1936), the crop was harvested and yielded 85 lbs. of grain and 190 lbs. of straw, which calculated per acre amounts to 340 lbs. of grain and 760 lbs. of straw.

### TABI CROPPING.

*Preparatory Tillage.*—The plot was ploughed twice on 29th Dai and 8th Bahman 1346 F. (11th December 1936).

*Sowing.*—Seed of sann-hemp at 60 lbs. per acre was sown broadcast on 8th Bahman 1346 F. (11th December 1936).

*Germination and Growth.*—The germination and growth were satisfactory.

*Harvesting.*—The crop was ploughed in the field on 22nd Ardibehisht 1346 F. (26th March 1937).

*Experiment No. 4.*—*Study of the effect of growing paddy in both Abi and Tabi seasons.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

### ABI CROPPING.

*Preparatory tillage.*—The plot was ploughed twice followed by the working of Jamboo from 22nd Amerdad to 6th Shahrewar 1345 F. (27th June to 12th July 1936).

*Manuring.*—Porka at 20 cart-loads per acre (1 cart-load = 400 lbs.) was applied before working the Jamboo.

*Sowing.*—Sprouted seed of paddy variety "Texinal" was sown broadcast on 14th Shahrewar 1345 F. (20th July 1936).

*Weeding and Interculture.*—One weeding was done on 30th Mehir 1345 F. (5th september 1936).

*Germination and Growth.*—Due to the fresh levelling and Hispa attack, the growth was not satisfactory. The crop got submerged under water and was heavily damaged.

*Harvesting and Yields.*—The crop was harvested on 4th Dai 1346 F. (8th November 1936) and yielded 71 lbs. of grain and 200 lbs. of straw which calculated per acre amounts to 284 lbs. of grain and 800 lbs. of straw.

### TABI CROPPING.

*Preparatory Tillage.*—Two ploughings followed by twice working of Jamboo were given from 1st to 29th Bahman 1346 F. (4th December 1936 to 1st January 1937).

*Manuring.*—Porka at 20 cart-loads per acre (1 cart-load = 400 lbs. ) was applied mixed with Jamboo.

*Sowing.*—Sprouted seeds of "Texinal" variety of paddy were sown broadcast on 8th Isfandar 1346 F. (10th January 1937).

*Weeding and Interculture.*—One weeding was done on 24th Farwardi 1346 F. (25th February 1937).

*Germination and Growth.*—The growth was satisfactory. But due to heavy rains and storms on 29th Amar-dad 1346 F. (2nd April 1937) the crop lodged down.

*Harvesting and Yields.*—The crop was harvested on 31st Khurdad 1346 F. (5th May 1937) and yielded 146 lbs of grain and 480 lbs. of straw which when calculated per acre amounts to 560 lbs. of grain and 1,920 lbs. of straw.

*Experiment No. 5.*—To investigate the possibilities of raising garden crops in Tabi season following an Abi crop of Paddy.

*Area.*—6 ghuntas =  $\frac{3}{20}$  acre.

### ABI CROPPING.

*Preparatory Tillage.*—Two ploughings followed by two workings of Jamboo were done from the 18th Amer-dad to 3rd Shahrewar 1345 F. (23rd June to 9th July 1936).

*Manuring.*—No manure was given.

*Sowings.*—Seedlings of Pusa T. 18, Hari Shanker and Texinal varieties were transplanted from 28th Amerdad to 3rd Shahrewar 1345 F. (3rd July to 9th July 1936).

*Weeding and Interculture.*—One weeding was done on 30th Mehir 1345 F. (5th September 1936).

*Growth.*—In the beginning the growth was satisfactory.

*Pests and Diseases.*—There was a severe attack of Hispa pest on all the varieties. As an experiment 5 lbs. of Nicifos was applied to the 2 ghunta plot of the variety Pusa T. 18. With this application the seedlings had revived to some extent.

*Harvesting and Yields.*—Due to fresh levelling of the field and Hispa attack the crop did not thrive normally. However, the crop was harvested on 12th Azur 1346 F. (17th October 1936) and yielded 167 lbs. of grain and 300 lbs. of straw, which calculated per acre amounts to 1,113 lbs. of grain and 2,000 lbs. of straw.

### TABI CROPPING.

*Note.*—Garden crops should have been planted in this season, but the field could not be drained off of the excess of water for a long period with the result that no such crops could be sown.

*Experiment No. 6.*—*To investigate the possibilities of growing garden crops in Abi followed by the usual Tabi crops.*

*Area.*—5 plots of ghuntas each = 10 ghuntas  
acre

### ABI CROPPING.

The following crops were grown in 2 ghuntas plots each in Abi season.—

- (1) Ginger.
- (2) Turmeric.
- (3) Arvi (arum)
- (4) Palwal.
- (5) Cotton.

*Preparatory Tillage.*—Two ploughings were given from 5th to 10th Amerdad 1345 F. (10th to 15th June 1936).

*Manuring.*—Farm Yard Manure at 20 cart-loads per acre (1 cart-load = 800 lbs.) was applied and was mixed by Jamboo.

*Ginger.*—was planted on ridges  $2\frac{1}{2}$  feet apart on 17th Amerdad 1345 F. (22nd June 1936) at 1,000 lbs. per acre. At planting time the land was too wet, which prevented germination. Even the few plants that germinated did not grow beyond 4" to 5" and ultimately died.

*Turmeric.*—was planted on ridges  $2\frac{1}{2}$  feet apart on 13th Amerdad 1345 F. (18th June 1936). Due to the excessive wetness of the soil at the time of sowing, neither the germination nor the growth were satisfactory. The seedlings died after attaining a height of about 6 inches. No irrigation was applied as the soil itself was very wet.

*Arum.*—was planted in lines 3 feet apart on 13th Amerdad 1345 F. (18th June 1936). The land was too wet. There was 10 per cent. germination and the plants died after attaining 5" to 6" height. No crop could be obtained.

*Palwal.*—Palwal cuttings were planted 6 feet apart on 18th Shahrewar 1345 F. (24th July 1936). The land was too wet at the time of planting. Only four cuttings germinated and after attaining a height of 5" to 6" died completely. No crop could be obtained.

*Cotton.*—The seed (cotton gaorani No. 12) was sown on ridges  $2\frac{1}{2}$  feet apart, on 18th Shahrewar 1345 F. (12th July 1936). Though the germination was satisfactory, the growth became stunted after developing 4 to 5 leaves and finally the plants died. No crop could be obtained.

### TABI CROPPING.

*Preparatory Tillage.*—The land was ploughed twice from 25th Dai to 9th Bahman 1346 F. (29th November to 12th December 1936).

*Manuring.*—No manure was given.

*Sowing.*—Sprouted seeds of Texinal variety of paddy were sown broadcast on 9th Bahman 1346 F. (12th December 1936).

*Growth and Germination.*—The growth of the crop was fairly satisfactory, but due to the heavy rains and storms of 29th Ardibehisht 1346 F. (2nd April 1937) the crop lodged completely.

*Harvesting.*—As the crop was completely spoiled no harvesting could be done.

*Experiment No. 7.— Investigation of the Possibilities of growing unirrigated Paddy crop in abi followed by the usual irrigated Tabi.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

### ABI CROPPING.

*Preparatory tillage.*—The land was ploughed twice on 23rd and 24th Thir 1345 F. (28th and 29th May 1936).

*Manuring.*—No manure was given.

*Sowing.*—The "Texinal" variety of paddy was sown broadcast on 24th Thir 1345 F. (29th May 1936).

*Germination and Growth.*—The crop did not germinate owing to lack of moisture. One irrigation was therefore, given on 1st Amerdad 1345 F. (6th June 1936) which induced quick germination. No irrigation was given afterwards. The growth was satisfactory, but due to heavy rains of 29th Shahrewar 1345 F. (4th August 1936) and submersion of plot under water, the crop was very badly affected.

*Harvesting and Yields.*—The crop was harvested on 12th Azur 1346 F. (17th October 1936) and yielded 85 lbs. of grain and 180 lbs. of straw, which calculated per acre, amount to 340 lbs. of grains and 720 lbs. of straw.

### TABI CROPPING.

*Preparatory tillage.*—Two ploughings and two workings of Jamboo were done between 27th Bahman 1346 F. (30th December 1936) and 14th Isfandar 1346 F. (16th January 1937).

*Manuring.*—No manure was given.

*Sowing.*—Sprouted seeds of Texinal paddy were sown broadcast on 14th Isfandar 1346 F. (16th January 1937).

*Weedings and Interculture.*—Two weedings were done on 8th and 27th Farwardi 1346 F. (9th and 28th February 1937).

*Germination and Growth.*—The growth of the crop was satisfactory but due to the heavy rains of 29th Ardi-behist 1346 F. (2nd April 1937) and due to the storm, the crop lodged.

*Harvesting and Yields.*—The crop was harvested on 27th Khurdad 1346 F. (1st May 1937) and yielded 150 lbs. of grain and 480 lbs. of straw, which when calculated per acre, amounts to 600 lbs. of grain and 1,920 lbs of straw.

*Experiment No. 8.*—*Investigation of the possibilities of growing an unirrigated Tabi crop following a usual irrigated Abi.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

## ABI CROPPING.

*Preparatory tillage.*—The land was ploughed twice from 2nd to 4th Shahrewar 1345 F. (8th to 10th July 1936) and the Jamboo was run from 5th to 7th Shahrewar 1345 F. (11th to 13th July 1936).

*Sowing.*—Sprouted seeds of “potti yerra gadda,” “Vunka Sannan” and “Texinal” varieties of paddy, were sown broadcast on 7th Shahrewar 1345 F. (13th July 1936).

*Weeding and Interculture.*—One weeding was done on 1st Aban 1345 F. (6th September 1936).

*Germination and Growth.*—The growth was satisfactory but the plot got submerged, and the crop was affected badly.



*Harvesting and Yields.*—The crop was harvested on 26th Dai 1346 F. (30th November 1936) and yielded 210 lbs. of grain and 440 lbs. of straw which calculated per acre amounts to 840 lbs. of grain and 1,760 lbs. of straw.

### TABI CROPPING.

*Preparatory tillage.*—The land was ploughed twice on 1st Farwardi 1346 F. (2nd February 1937).

*Sowing.*—Sprouted seed “Texinal” variety of paddy was sown broadcast on 1st Farwardi 1346 F. (2nd February 1937).

*Germination and Growth.*—Germination was good but the growth in the initial stages was not satisfactory.

*Harvesting and Yields.*—The heavy storms of 29th Ardibehist 1346 F. (2nd April 1937) caused a total destruction of the crop and nothing could be harvested.

*Experiment No. 9.*—*Observation of the effect of leaving the land fallow in Abi season to be followed by a crop in Tabi.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

### ABI CROPPING.

The plot was left fallow in this season.

### TABI CROPPING.

*Preparatory tillage.*—The land was ploughed thrice followed by working of the Jamboo from 6th Bahman to 9th Isfandar 1346 F. (8th December to 11th January 1937).

*Sowing.*—Sprouted seedlings of “Texinal” variety of paddy were sown broadcast on 16th Isfandar 1346 F. (18th January 1937).

*Weedings and Interculture.*—Two weedings were done on 9th Farwardi 1346 F. (10th February 1937) and 28th Farwardi 1346 F. (1st March 1937).

*Germination and Growth.*—Growth was satisfactory. Due to heavy rains and storm on 29th Ardibehist 1346 F. (2nd April 1937), the whole crop lodged down and the inflorescence was badly damaged.

*Harvesting and Yields.*—The crop was harvested on 27th Khurdad 1346 F. (1st May 1937) and yielded 160 lbs. of grain and 600 lbs. of straw, which when calculated per acre amounts to 640 lbs. of grain and 2,400 lbs. of straw.

*Experiment No. 10.*—*Observation of the effect of leaving the land fallow in Tabi season to be followed by Abi Paddy.*

*Area.*—10 ghuntas =  $\frac{1}{4}$  acre.

### ABI CROPPING.

*Preparatory tillage.*—The land was ploughed twice from 21st to 29th Amerdad 1345 F. (26th June to 4th July 1936), followed by the working of Jamboo from 29th Amerdad to 4th Shahrewar 1345 F. (4th to 10th July 1936).

*Manuring.*—No manure was given.

*Sowing.*—Sprouted seeds of “Texinal” variety of paddy were sown broadcast on 4th Shahrewar 1345 F. (10th July 1936).

*Weedings and Interculture.*—One weeding was done on 1st Aban 1345 F. (6th September 1936).

*Germination and Growth.*—The germination and growth were satisfactory. But as the plot got submerged under water on 29th Shahrewar 1345 F. (4th August 1936), the crop suffered a heavy loss.

*Harvesting and Yields.*—The crop was harvested on 22nd Dai 1346 F. (26th November 1936) and yielded 200 lbs. of grain and 240 lbs. of straw, which when calculated per acre amounts to 800 lbs. of grain and 960 lbs. of straw.

### TABI CROPPING.

The plot was left fallow in this season.

*Experiment No. 11.—Observation of the behaviour of Sugarcane in the water-logged conditions of silted area.*

*Area.*—2 ghuntas=1/20 acre.

*Preparatory Tillage.*—Two ploughings were given from 21st to 23rd Farwardi 1346 F. (22nd to 24th February 1936) and shallow furrows were prepared 4' apart.

*Manuring.*—No manure was applied.

*Sowing.*—A few sets each of the following eight varieties of sugarcane were planted end to end in the lines on 24th Farwardi 1346 F. (25th February 1936) and covered with earth.

- (1) Co. 205
- (2) Co. 213
- (3) Co. 243
- (4) Co. 281
- (5) Co. 285
- (6) Co. 290
- (7) Co. 511
- (8) P. O. J. 2878

*Germination and Growth.*—The sprouting was not healthy and the growth was stunted owing to excess of moisture in soil. Tillering was observed but all of them died out.

*Weeding and Interculture.*—Two weedings were done on 2nd Khurdad and 15th Thir 1346 F. (6th April and 20th May 1937).

*Irrigation.*—Three irrigations were given in the dry months. The crop is still in the field by the lapse of the year under review, though the growth is not very promising.

*Harvesting.*—The present crop is still in the field by the lapse of the year under review, though the growth is not promising. The eight varieties of sugarcane planted last year (1344-45 F.) did not thrive at all due to excess of moisture in soil. At the time of harvest there were two or three leaves and no tillering at each stool. As

there was nothing to harvest the plot was ploughed on 24th Dai 1346 F. (28th November 1936) and prepared for the Tabi sowings.

*General.*—A temporary Kamgar is stationed at Rampur who is responsible for the proper conduct of the cultural operations under the general supervision of the Agriculture Officer stationed at Medak.

#### CHARGE.—

Mr. Ehasan Hussain supervised the work from 1st Amerdad 1345 F. (6th June 1936) to 31st Thir 1346 F. (5th June 1937). But during the interim, from 16th Dai 1346 F. to 3rd Ardibehist 1346 F. (20th November 1936 to 7th March 1937) as Mr. Ehsan Hussain was deputed to the U. P. Industrial and Agricultural Exhibition at Lucknow, Mr. Yeshwant Rao K. Javadekar, acted in his place, and supervised the work.

ANNUAL REPORT OF GOVERNMENT MAIN  
FARM, WARANGAL, FOR THE  
YEAR 1345-46 F.

The main Farm at Warangal forms the centre of experimentation for the Eastern Telingana Division. The lands for the Farm were acquired in the year 1342 F. and the work started thereon.

*Object of the Farm.*—Since it is the Main Farm of Division, it serves the following purposes:—

(a) Experimentation with the existing crops of the Division with a view to their improvement.

(b) Introduction of new crops and improved strains suitable to the area.

(c) To acquaint the cultivators with improved methods of cultivation by the introduction of improved implements and the judicious application of manures.

*Location of the Farm.*—The Farm is situated on P.W.D. Warangal-Mulug Road about 5 miles from the Warangal Railway Station and about 8 miles from Kazipet Station both of which are on the State Broad Gauge lines.

*Area:*—The total area of the Farm is about 105 acres. Out of this 14 acres have been set aside for roads, buildings, etc., and 10 acres have been given over to the Horticultural Section, thus leaving a total cultivable of about 80 acres.

*Soils.*—The following types of soils are represented on the Farm. The area of each type of soil is also given.

(1) Chalka . . . 40 acres (cultivable)

(2) Paddy lands . . . 23 acres.

(3) Regur (Black Cotton) 18 acres.

It would be evident from the above that all types of soils represented in this Division are included in the Farm area and as such it is pre-eminently suited for carrying out experimental work, the results of which would be applicable to the tract.

*Rainfall.*—The total rainfall as would be evident from statement No. 1 amounted to 42"-70 cents. The precipitation and general distribution of the rainfall during the year under report was what one could desire and the low yields of crops as would be evident from the statements attached could not therefore be attributed to the rainfall.

*Sources of Irrigation.*—The main source of irrigation on the Farm is the Kotacheroo Tank which irrigates a major portion of the paddy area. A certain portion of the area on account of its high level is not irrigable at all. It may not be out of place here to mention that the tank being the last in the chain of tanks gets filled up only when the other tanks overflow, so that water is available for irrigation late in the season. Sometimes it is so late that only one crop of paddy is possible. Another source of water supply is an old dis-used well which has been repaired and utilised during the year under report and sugarcane and garden crops raised under it. The new well which had been dug at the commencement of the Farm irrigates the Horticultural area on the Farm.

*Drainage.*—One of the reasons of low yields on the Farm is the lack of proper drainage, especially, in the chalka area, which, experience in the past years has shown, because of an impervious layer of sub-soil, retains water for a considerable time through the year. Several drainage channels have been made and during the year under report the crop response has been better than what it was during the previous years. Lack of funds have not permitted a comprehensive drainage scheme for the entire Farm area.

*Farm Buildings.*—Quarters for the officers, probationers and labourers are nearing completion, and it is expected that they will be ready for occupation very shortly. Sanction for other quarters is awaited.

### *Crops.*

During the year under report, row observation trials of the following crops have been carried out. These preliminary trials are being carried out with a view to eliminate the unsuitable and undesirable varieties before starting varietal tests.

*Kharif Jowar.*—The following five varieties were grown during the year under report:—

- (1) Ramkhel.
- (2) Californian Dwarf.
- (3) Malli Jonna.
- (4) Chinnagaddi Jonna.
- (5) Nalgonda Local.

Sixteen replications of each of the above varieties were grown. Out of the five varieties grown, Ramkhel proved an absolute failure. The rest of the varieties did not do so well either. It is too early yet to draw any definite conclusions.

*Groundnuts.*—The following four varieties were grown during the year under report:—

- (1) Spanish Peanut Jalgaon.
- (2) Guthichenaga (Local).
- (3) Small Japan-Nagpur.
- (4) Akola No. 10

Sixteen replications each of the above varieties were grown.

*Bajra.*—The following four varieties of Bajra were tried during the year under report:—

- (1) Cawnpore (Awned)
- (2) African.
- (3) Akola.
- (4) Jamnagar Giant.

Twelve replications of each of the varieties were sown.

As usual Cawnpore Awned has given the highest yield.

*Tur.*—The following ten varieties of Tur were grown during the year under report:—

- (1) Pusa 80.
- (2) Pusa 2.
- (3) Warangal (Local).
- (4) Nizam.

- (5) Desi.
- (6) Poona.
- (7) Coimbatore.
- (8) Pusa A.
- (9) Pusa R 51.
- (10) Nagpur.

Of the above ten varieties the last two are erect and the rest are branching. For the last three years Poona has given consistently higher yields on the Farm. Of the erect varieties Nagpur seems to be very promising. Further trials are required before any definite conclusions can be drawn.

*Green Gram.*—The following four types of Green Gram were tried on the Farm during the year under report:—

- (1) Green Gram Pusa.
- (2) Green Gram (obtained from the districts).
- (3) Green Gram (Warangal).

*Til.*—Two varieties of the Til, black and white were sown on the Farm during the year under report.

### *Rabi Crops.*

*Wheat.*—The following five types of wheat were tried on the Farm during the year.

- (1) Rajura Local.
- (2) Rajura (Imported).
- (3) Wheat 85.
- (4) Pusa 4.
- (5) Local (Sharbati).

There were 12 replications of each of the above types.

*Rabi Jowar.*—The following three varieties of Jowar were grown on the Farm during the year under report:—

- (1) Maldandi (2) Local Yellow (3) Dagadi.

There were nine replications of each variety.



*Bengal Gram.*—The following four types of Gram were sown on the Farm during the year under report:—

- (1) Gwalior.
- (2) Himayatsagar.
- (3) Local.
- (4) Cawnpore.

There were twelve replications of each variety.

*Linseed.*—The following four types of linseed were tried on the Farm during the year under report:

- (1) Poona Local.
- (2) Cawnpore Local.
- (3) Cawnpore 30.
- (4) Parbhani Local.

There were twelve replications of each variety.

*Sugarcane.*—The following ten varieties of sugarcane were grown on the Farm during the year under report:—

- (1) Fiji B.
- (2) E. K. 28.
- (3) H. M. 320.
- (4) H. M. 544.
- (5) P. O. J. 2714.
- (6) P. O. J. 2878.
- (7) Co. 213.
- (8) Co. 223.
- (9) Co. 281.
- (10) Co. 290.

#### *Other Experimental Work.*

*Tobacco.*—The work on tobacco was undertaken for the Imperial Council of Agricultural Research. The following three varieties of tobacco were grown for trial.

- (1) Adcock. (2) Harrison's Special. (3) No. 142

The crop was grown during the rainy season both on chalka and regur soil. The object was to flue-cure it

for cigarette manufacture. Since the amount for the construction of the barn was not transferred in time, the crop was rack-cured. The crop on the chalka soil was better than that on the regur soil.

*Cotton*.—The following five varieties of cotton were grown on the Farm during the year under report:—

- (1) Local.
- (2) Gaorani 4.
- (3) Gaorani 6.
- (4) Gaorani 12.
- (5) Parbhani American.

The crop was grown both on chalka and regur soil during the Kharif season. The crop on the chalka soil was much better than on the regur soil.

*Castor*.—Several strains of castor were tried on the Farm during the year under report for the Economic Botanist. The crop was harvested and taken away and hence no statements of outturns can be attached.

*Paddy*.—The following strains of paddy were tried on the Farm during the Abi season:—

- (1) Palasannal.
- (2) Himayatsagar No. 264.
- (3) Himayatsagar No. 161.
- (4) Himayatsagar No. 248.
- (5) Himayatsagar No. 242.
- (6) Himayatsagar No. 263.
- (7) G. E. B. 24.
- (8) Himayatsagar No. 80.
- (9) Himayatsagar 127.

Of these the last three are long-duration strains and the first six are early yielding.

The following strains of paddy were tried during the Tabi season:—

- (1) Palasannal.
- (2) Himayatsagar No. 242.
- (3) Himayatsagar No. 248.
- (4) Himayatsagar No. 161.
- (5) Himayatsagar No. 264.
- (6) Himayatsagar No. 263.

Palasannal is the variety grown locally and Himayat-sagar No. 263 is the strain that is being distributed to the cultivators. The other strains were tried against the two both during the Abi and Tabi seasons.

No definite conclusions can yet be drawn.

*Crops other than experimental.*—Besides carrying on experimental works of its own, the Farm serves as a source of supply of improved cropseeds for propaganda purposes. A certain area is yearly set apart for the growing of such crops. During the year under report, a few garden crops were also grown, for the supply of which a demand has sprung up in the project areas.

*Farm Demonstration.*—Annual demonstration was held on the Farm during the year. Improved crops, improved methods of cultivation, working of improved implements, sugarcane cultivation, jaggery making and flue curing of tobacco were demonstrated. Both cultivators and non-cultivators visited the farm in their thousands and the show was acclaimed a success.

*Farm Cattle.*—During the year under report the Farm lost one of its best animals. Otherwise the cattle maintained their health even after a strenuous strain on them.

*Visitors to the Farm.*—The Hon'ble the Revenue Member and the Secretary to Government, Industries and Commerce Department, paid a visit to the Farm during the year under report. Amongst the other distinguished visitors to the Farm may be mentioned the Subedar Saheb and Talukdar Saheb of Warangal.

*Farm Staff.*—Mr. P. J. Onkaram remained in charge of the Farm during the year under report. There were two Probationers deputed to the Farm during the year under report. One of the Fieldmen of the Farm, Mr. Abdul Wali, was granted leave and deputed to Nagpur for training on Government Scholarship. The Farm Superintendent and his Assistant Mr. Sarvotam Rao together with the Probationers and the other Farm staff carried on their work most satisfactorily. The Economic Botanist to Government and the Cotton Research

Botanist by carrying on their respective experimental works have shown a keen interest in the Farm and have from time to time given technical advice and guidance in the carrying out of their respective programmes. Mr. A. B. H. Khoorshid, the Economic Botanist visited the Farm also. My thanks are due to those gentlemen for their interest.

RAINFALL  
for the crop year

Date	JUNE 36		JULY 36		AUGUST 36		SEPTEMBER 36		OCTOBER 36		NOVEMBER 36	
	In-ches	Cents	In-ches	Cents	In-ches	Cents	In-ches	Cents	In-ches	Cents	In-ches	Cents
1	..	..	..	..	..	..	1	..	..	..	..	..
2	..	23	2	47	..	..	6	..	..	..	..	..
3	..	..	..	3	..	50	21	..	..	..	..	..
4	..	..	..	..	..	61	..	..	..	..	..	..
5	..	..	..	..	..	70	..	..	..	..	..	..
6	..	..	..	..	..	..	6	..	..	..	..	..
7	..	..	..	..	..	39	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..
9	1	14	..	30	..	23	42	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	7	..	..	..	..	..	..
14	..	..	..	..	..	88	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	31
16	..	63	..	..	..	77	..	..	..	..	..	..
17	..	8	..	22	..	23	26	..	..	..	..	..
18	..	20	..	4	1	64	..	..	..	..	..	..
19	..	..	2	4	..	1	..	..	..	..	..	..
20	..	11	1	15	..	3	..	..	..	..	..	..
21	..	..	2	13	..	..	..	..	..	..	1	80
22	..	..	..	10	..	..	54	..	..	..	..	..
23	..	3	1	27	..	..	..	..	..	..	..	..
24	..	70	2	66	..	..	..	..	..	..	..	..
25	1	19	..	..	..	..	..	..	..	..	..	..
26	1	32	..	..	..	..	29	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	25	31	2	55	..	..	..
30	..	5	..	..	1	26	..	..	36	..	..	..
31	..	..	..	10	..	..	..	1	55	..	..	..
Total..	5	68	12	51	7	66	2	16	4	46	2	11

T.

Fasli.

R ts	JANUARY 37		FEBRUARY 37		MARCH 37		APRIL 37		MAY 37		Re- marks Grand total
	In- ches	Cents	In- ches	Cents	In- ches	Cents	In- ches	Cents	In- ches	Cents	
	..	..	..	..	..	..	..	55	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	5	..	16	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	3	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..	..	..	..
	..	..	..	29	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	83	..	..	..	..	..	..	
	..	..	..	9	..	..	..	..	..	..	
	..	..	..	21	..	..	..	93	..	..	
	..	..	..	50	..	..	..	..	..	..	
	..	..	2	..	..	..	2	70	..	..	
	..	..	..	..	..	..	..	43	..	..	
	..	..	1	..	..	..	1	7	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	28	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	..
	..	..	1	92	..	33	5	87	..	..	42-70 Cents.

# ANNUAL REPORT OF THE GOVERNMENT MAIN EXPERIMENTAL FARM, PARBHANI For the year (1345—46 F.) 1936—37 A. D.

## I. INTRODUCTION.

The farm was started in Meher 1337 F. (August 1928 A. D.) It covers an area of 265 acres of which 210 acres are under cultivation, 8 acres are reserved for grazing and the rest are under buildings, roads, and drains, etc.

It is situated in the centre of the Mahratwada tract, the soil being that which is commonly known as Black Cotton Soil, with a substratum of Murrum varying in depth from 1 to 12 feet. It is about a furlong from the railway station. The elevation is 1338 feet above sea level, north latitude 19° and east longitude 77°.

## II. OBJECT.

The main object is to study the agricultural problems of the Godavari Division which comprises of the Mahratwada tract, including the cultivation of economic crops, which have their relative importance for the common cultivators.

## III. ADMINISTRATION.

During the year under report Mr. C. V. Chari was in-charge of the farm till the 20th Aban 1345 F. (25th September 1936 A.D.) from whom Mr. Sitaram Pershad took charge on the 21st Aban 1345 F. (26th September 1936 A.D.) and remained in charge of the farm for the remaining period.

The following Officers were working on the farm, except for the periods they were on leave or on special duties as shown:—

Mr. C. V. Chari, Assistant Superintendent, was on one month's privilege leave from 5th Dai 1346 F. (9th November 1936 A.D.)

Mr. B. M. Pansare, Probationer was acting for the Agricultural Officer, Parbhani from 24th Aban 1345 F. (29th September 1936) to 15th Azur 1346 F. (20th October 1936 A. D.), was on special duty in connection with the seed distribution under the Assistant Director of Agriculture, Nanded from 19th Khurdad 1346 F. (23rd April 1937) to 31st Thir 1346 F. (5th June 1937 A.D.).

Mr. V. K. Joshi, Probationer was in charge of the Office of the Assistant Director of Agriculture, Nanded from 17th Aban 1345 F. to 11th Azur 1346 F. (22nd September 1936 to 16th October 1936 A. D.), and was on special duty for seed distribution work under the Assistant Director of Agriculture, Nanded from 19th Khurdad 1346 F. to 31st Thir 1346 F. (23rd April 1936 to 5th June 1936 A. D.).

Mr. Hafizuddin was attached to this farm as Probationer from 7th Dai 1346 F. to 26th Bahman 1346 F. (11th November 1936 to 29th December 1936 A. D.) when he was transferred to the section of the Agriculture Chemist.

The work of the officers, the field staff and clerical staff was very satisfactory.

#### IV. SEASON.

The total rainfall for the year 1936-37 (1345-46 F.) was 32.88 inches which is near to the average rainfall of the last 27 years namely 34.42 inches, and the distribution was fairly good. All the Kharif crops were sown by the end of Amerdad 1345 F. (June 1936). The germination was satisfactory. The Rabi crops were sown in the last week of Aban 1345 F. (September 1936) and in the first week of Azur 1346 F. (October 1936). The germination was good. During the months of Bahman and Isfandar 1346 F. (December 1936 and January 1937) cold waves passed over the tract four times. This affected the Rabi Jowar to a great extent.

#### V. CROPS.

Out of 210 acres under cultivation about 201 acres were under dry crops such as Cotton, Jowar (Kharif and Rabi), Groundnut, Wheat, Gram, Bajra, etc. and 9 acres were under well irrigation, the crops grown being Sugarcane, Guinea-grass, Vegetables, Fruit trees, etc.



## VI. EXPERIMENTAL WORK.

The following experiments were carried out on the farm during the year under report:—

- (1) Sugarcane Varietal test.
- (2) Rotational Experiment.
- (3) Manurial Experiment on Cotton.
- (4) Seed Rate Experiment on Groundnut.
- (5) Groundnut Varietal test.
- (6) Cotton Varietal test No. 1 (long stapled).
- (7) Cotton Varietal test No. 2 (short stapled).
- (8) Arhar Varietal test.
- (9) Mung Varietal test.
- (10) Rabi Jowar Varietal test.
- (11) Wheat Varietal test.
- (12) Gram Varietal test.
- (13) Linseed Varietal test.
- (14) Green Manuring Experiment on Wheat.

### 1. *Sugarcane Varietal Test.*

*Object.*—To find out the most suitable variety for the Marathawada tract.

*Varieties and Lay-out.*—

- (a) Local .
- (b) C. O. 290.
- (c) C. O. 213.
- (d) C. O. 223.
- (e) P. O. J. 2878.
- (f) E. K. 28.

The above six varieties were tried on Fishers randomised block method giving 10 replications.

*Preparatory Tillage.*—Harrowing was done 3 times on 26-12-1344 F. (2-10-1935 A.D.); 18-1-1345 F. (24-10-1935 A.D.); 13-2-1345 F. (18-11-1935 A.D.). Trenches 60 feet long by  $1\frac{3}{4}$  feet wide by  $1\frac{1}{4}$  feet deep were prepared 4 feet apart.

*g.*—Planting of sets was done in trenches on F. (1-1-1936 A. D.). Three eyes were kept in d fifty such sets were planted per row.

*ation.*—Germination took place on 20-4-1345 936). The germination percentages were as

<i>riety.</i>	<i>Percentage of germination.</i>		
a) Local	..	..	26.00.
b) C. O. 290	..	..	50.80.
c) C. O. 213	..	..	70.30.
d) C. O. 223	..	..	58.50.
e) P. O. J. 2878	..	..	48.30.
f) E. K. 28	..	..	71.00.

*ling.*—Gaps were filled on 8-5-1345 F. (10-2-)

*ing.*—Sunn-hemp was sown in plot on 21-9-27-6-1935 A.D.), and burried on 11-11-1344 F. 5). Besides this Sulphate of Ammonia at the 00 lbs. per acre was given in two doses on F. (16-3-1936) and 4-10-1345 F. (10-7-1936

*tion.*—First four irrigations were given at an f one week while subsequent ones were given night.

*lture and after care.*—After irrigation mulch-done. Partial earthing up was done on 28-10-3-8-1936 A.D.) and final earthing up was done 1345 F. (5-10-1936 A.D.)

*ng.*—Tillering records were as follows:—

<i>Variety.</i>	<i>Tillering percentage.</i>		
) Local	..	..	252
) C.O.290	..	..	239
) C.O.213	..	..	200.6
) C.O.223	..	..	239
) P.O.J.2878	..	..	115
) E.K.28	..	..	22.3

*Pests and Diseases.*—There was an attack of Chylo Symplex, the remedial measures were adopted.

*Flowering:*—

<i>Variety.</i>		<i>Date of flowering.</i>
(a) Local	.. ..	..
(b) C.O.290	.. ..	19-12-1936.
(c) C.O.213	.. ..	18-11-1936.
(d) C.O.223	.. ..	14-11-1936.
(e) P.O.J.2878	.. ..	13-12-1936.
(f) E.K.28	.. ..	..

*Harvesting.*—Harvesting was started on 23-4-1936 P. (25-1-1937) and continued up to 9-5-1936 P. (10-2-1937 A. D.).





## 2. Rotational Experiment.

*Object.*—To compare two Local two years rotations.—

(a) Kharif Jowar and cotton.

(b) Rabi Jowar and cotton.

with two improved three years rotations.

(a) Kharif Jowar, groundnut, cotton.

(b) Rabi Jowar, groundnut, cotton.

*Lay out.*—The improved rotations of the experiment were laid out by Fisher's Randomised block method, and local rotation by Student's A B B A method, replicated 10 times.

*Preparatory Tillage.*—Ploughing was done after the harvest of the previous crop and were harrowed four times. No manure was given.

*Sowing.*—Seeds of Cotton, Kharif Jowar, Rabi Jowar, were dibbled in rows 18" apart while groundnut was dibbled 12" apart. Spacing between plants was 9" in cotton and 6" in Kharif Jowar, Rabi Jowar and Groundnut.

*Dates of sowing.*—

Cotton	22-6-1936.
Kharif Jowar	23-6-1936.
Groundnut	23 and 24-6-1936.
Rabi Jowar	3-10-1936.

*Gap filling.*—Gap filling was done on the following dates.—

Cotton	29-6-1936.
Kharif Jowar	29-6-1936.
Groundnut	2-7-1936.
Rabi Jowar	17-10-1936.

*Thinning.*—Thinning was done in cotton-beds to a single plant as soon as the plants were 6 to 9 inches high and in Jowar when they were 3 to 4 inches.

*Interculture.*—5 hand hoeings and 6 weedings were done in Cotton, Kharif Jowar, Groundnut, and only one hoeing and weeding in the Rabi Jowar.



EXPERIMENTAL FARM, PARRHANI-DECCAN. YEAR 1936-37 A.D.

*Rotational Experiment No. 1.*

Comparison of :— Improved Rotation with Local Rotation.

(B) Groundnut

(B) Cotton.

(B) Cotton.

(C) Kharif Jowar.

(C) Kharif Jowar.

*s. per plot (grain yields above, fodder yields below for each plot in the plan).*

C	B	C	A	B	C	A	B
---	---	---	---	---	---	---	---



MAIN EXPERIMENTAL FARM PARBHANI-DECCAN. YEAR 1936-37

*Rotational Experiment No. II*

Comparison of :— Improved Rotation with Local Rotation.

(A) Groundnut.

(B) Cotton.

(C) Rabi Jowar

(B) Cotton.

(C) Rabi Jowar.

Plan and yield in lbs. per plot (grain yields above fodder yields below for each plot in the)

	B	A	B	A	B	C	B	A	B
--	---	---	---	---	---	---	---	---	---

*Manurial Experiment on Cotton.*

find out some profitable manurial treatment in the Mahratwada tract.

*and Lay-out.*—The experiment has been carried out by the farmer's randomised block method replicated 8 times, the treatments being—

1. Control method is 5 cart-loads of Farm yard manure.

MAIN EXPERIMENTAL FARM PARBHANI-DECCAN. YEAR 1936-37 A.D

Varietal.

*Manurial Experiment on Cotton.*

Comparison of : (A) Local 5 cart-loads Farm Yard Manure ; (B) 30 lbs. of Nitrogen as Farm Yard Manure ; (C) 15 lbs. Nitrogen as Farm Yard Manure + 15lbs. Nitrogen as Nicifos ; (D) 15 lbs. Nitrogen as Farm Yard Manure + 15 lbs. Nitrogen as Groundnut cake

## SUMMARY OF RESULTS.

MEAN YIELDS IN LBS.				General mean	Stand- ard error of treat- ment mean	Whether general effect of treat- ment is signi- ficant by 'Z' test	Critical differ- ence for signifi- cance (in lbs. per acre)
A	B	C	D				
46.9	642.8	667.6	667.2	639	18	Yes	51.66
91.8	100.6	102.9	101.9	100	2.8	..	8.08

MAIN EXPERIMENTAL FARM, PARBHANI-DECCAN. YEAR 1936-37 A.D.

Varietal.

*Seed Rate Experiment of Groundnut.*

Comparison of : (A) 30 lbs. per acre ; (B) 60 lbs. per acre ; (C) 40 lbs. per acre. (D) 80 lbs. per acre.

*Plan and Yield in Ounces per Plot.*

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## SUMMARY OF RESULTS.

MEAN YIELDS IN LBS.				General mean	Stand- ard error of treat- ment mean	Whether general effect of treat- ment is signifi- cant by ' Z ' test	Critical differ- ence for signifi- cance (in lbs. per acre)
A	B	C	D				
2,040	2,703	2,661	2,736	2,536	78.04	Yes	209.6
80.42	106.5	104.9	108	100	2.87	..	8.26

*Interculture.*—Three hand hoeings and three weeding were done.

*Harvesting.*—All the early varieties such as Spanish peanut and local was harvested on 13-10-1936. the late varieties such as Akola No. 10, Big Japan, and Rango (Kanki No. 17) were harvested on 22-10-1936.







*Cotton Varietal Test No. I.*

to compare three single plant strains of  
 one of Bani 306 with Gaorani local for the

*of Varieties.*—

.

ii Local.

iii 2 R I







*7. Cotton Varietal Test No. II.*

*Object.*—To determine the most suitable substitute for the mixed crop now grown in Parbhani District.

*Varieties and Lay-out.*—

*Varieties.*—

- (a) Gaorani 1 A.
- (b) Gaorani 12 F.
- (c) Parbhani 26 H.
- (d) Havri 3.
- (e) Parbhani Local.

Five varieties were replicated 10 times on Fisher's Randomised block method.

*Preparatory Tillage.*—The land was ploughed once after groundnut and given 5 harrowings, before sowing.

*Sowing.*—5 good seeds were dibbled on 23-6-1936, in each seed hole 9" apart and 18" apart between rows. Germination started on 27-6-1936. Gap-filling was done on 4-7-1936. Final thinning was done on the 6-8-1936.

*Interculture.*—Five hand hoeings and 4 weedings were done.

*Harvesting.*—Harvesting was done in four pickings from 13-10-1936 to 13-12-1936









8. *Arhar Varietal Test.*

*Object.*—To find out a most profitable variety for the Makratwada tract.

*Varieties and Lay-out.*—

*Varieties.*—

(a)	Arhar type No. 15	from Pusa.
(b)	„	24 „
(c)	„	51 „
(d)	„	80 „
(e)	Local.	

The above five varieties were tried on Fisher's randomised block method replicated 7 times.

*Preparatory Tillage.*—Harrowing was done twice.

*Sowing.*—Drilled 24" apart between rows and thinning to 12" apart between plants on 27-6-1936 and 6-9-1936 respectively.

*Interculture.*—4 hoeings and 3 weedings were done.

*Flowering.*—

*Date of flowering.*

*Variety*

(a)	Arhar type No. 15	..	15-12-1936.
(b)	„	24	13-12-1936.
(c)	„	51	2-12-1936.
(d)	„	80	8-12-1936.
(e)	Local		27-9-1936.

*Harvesting.*—Local was harvested on 21-2-1937. Arhar types Nos. 51 and 80 were harvested on 1-3-1937.

Arhar type Nos. 15 and 24 were harvested on 12-3-1937.







### 9. *Mung Varietal Test.*

*Object.*—To find out the most profitable variety for the Mahratwada tract

*Varieties and Lay-out.*—

*Varieties.*—

- (a) Pusa type No. 18.
- (b) Pusa type No. 20.
- (c) Pusa type No. 23.
- (d) Pusa type No. 36.
- (e) Local.

The above five varieties were tried on Fisher's randomised block method replicated 8 times.

*Preparatory Tillage.*—The field was ploughed once and harrowed 3 times.

*Sowing.*—Drilled 15" apart between rows on 26-6-1936.

*Interculture.*—2 hoeings and one weeding were done.

*Flowering.*—

*Varieties.*

*Date of flowering.*

(a) Pusa type No. 18	8-8-1936.
(b) Pusa type No. 23	7-8-1936.
(c) Pusa type No. 20	26-7-1936.
(d) Pusa type No. 36	12-8-1936.
(e) Local	26-7-1936.

*Harvesting.*—Local and Pusa types No. 28 were harvested on 31-8-1936.

Pusa types No. 18 and 23 were harvested on 22-9-1936.

Pusa type No. 36 was harvested on 27-9-1936.









### 10. *Rabi Jowar Varietal Test.*

*Object.*—to find out a most profitable strain to substitute the Local in the Mahratwada tract.

*Varieties and Lay-out.*—

*Varieties.*—

- (a) Hyderabad 32.
- (b) Dagadi 803.
- (c) Dagadi 809.
- (d) Hyderabad 47.
- (e) Local.

Five varieties were laid out on Fisher's randomised block method replicated 10 times.

*Preparatory Tillage.*—One ploughing and six harrowings were done before sowing.

*Sowing.*—Two seeds per hole were dibbled in rows of 18" apart and 9" apart between plants on 5-10-1936. Gaps were filled in on 14-10-1936. Final thinning was done on 2-11-1936.

*Interculture.*—Four hoeings were done.

*Flowering.*—

<i>Varieties.</i>	<i>Date of flowering.</i>
(a) Hyderabad 32	8-12-1936.
(b) Dagadi 803	12-12-1936.
(c) Dagadi 809	13-12-1936.
(d) Hyderabad 47	9-12-1936.
(e) Local	8-12-1936.

*Harvesting.*—Harvesting was done on 22-2-1937.

*Remarks.*—During the months of December 1936 and January 1937.







11. *Wheat Varietal Test.*

*Object.*—To find out the most profitable strain replace the mixed crop of the Mahrattwada tract.

*Varieties and Lay-out.*—

*Varieties.*—

- (a) Osmanabad 72-4.
- (b) Osmanabad 23-10.
- (c) Osmanabad 85-6.
- (d) Aurangabad 460-B 1.
- (e) Aurangabad 461-A 2.
- (f) C. P. 137-7.
- (g) Bansi Local.
- (h) Pusa 4.
- (i) Osmanabad 119-4.
- (j) Cawnpore 13 Awne.

10 varieties were replicated ten times by Fishers' randomized block method.

*Preparatory Tillage.*—One ploughing and six harrowings were done before sowing.

*Sowing.*—Sowing was done by dibbling seeds per hole 6" apart and 15" apart in rows on 6-10-1936. Gap-filling was done on 18-10-1936. Thinning was done on 23-10-1936.

*Interculture.*—6 hand hoeings and one weeding were done.

*Flowering.*—

<i>Variety.</i>	<i>Date of flowering.</i>
(a) Osmanabad 72-4	17-12-1936.
(b) Osmanabad 23-10	15-12-1936.
(c) Osmanabad 85-6	13-12-1936.
(d) Aurangabad 460-B 1.	23-12-1936.
(e) Aurangabad 461-A 2.	5-12-1936.
(f) C. P. 137-7	12-12-1936.
(g) Bansi Local	14-12-1936.
(h) Pusa 4.	21-12-1936.
(i) Osmanabad 119-4	18-12-1936.
(j) Cawnpore 13 Awne.	18-12-1936.

*Harvesting.*—Harvested between 3-3-1937 and 10-1937.









12. *Gram Varietal Test.*

*Object.*—To find out a most profitable variety of Gram for the Mahratwada tract.

*Varieties and Lay-out.*—

*Varieties.*—

(a) Gwalior.

(b) Local.

(c) Sabour.

(d) Gram type No. 58 from Pusa.

(e) Gram type No. 17 from Pusa.

Five varieties were replicated 10 times as per Fisher randomised block method.

*Preparatory Tillage.*—Five harrowings were done before sowing.

*Sowing, etc.*—Sowing was done by hand, three seeds per hole were put in rows of 15" apart and 6" apart between holes, on 27-12-13-15 F. (2-10-1936). Gaps were filled in on 10-1-13-16 F. (15-10-1936). Thinning was done on 27-1-13-16 F. (1-11-1936).

*Interculture.*—Five hand hoeings were done.

*Flowering.*—

<i>Varieties.</i>	<i>Date of flowering.</i>
(a) Gwalior	24-11-1936.
(b) Local	22-11-1936.
(c) Sabour	24-11-1936.
(d) Pusa No. 58	30-11-1936.
(e) Pusa No. 17	28-11-1936.

*Harvesting.*—Sabour, Local, and Gwalior were harvested on 23-1-1937.

Pusa types Nos. 17 and 58 were harvested on 12-2-1937.



Comparison



13. *Linsced Varietal Test.*

*Object.*—To find out a most profitable variety for the Uthratwada tract.

*Varieties and Lay-out.*—

*Varieties.*—

- (a) Punch Koshi.
- (b) C. P. No. 30.
- (c) C. P. Local.
- (d) Poona (Local).
- (e) Local.

Five varieties were replicated 10 times and laid out Fisher's randomised block method.

*Preparatory Tillage.*—Five harrowings were done before sowing.

*Sowings, etc.*—The seed was dibbled at the rate of 4 ds per hole at a space of 6" between holes and 15" between rows on 1-10-1936. Gaps were filled in on 15-10-36. Final thinning was done on 20-11-1936.

*Interculture.*—Five hoeings and one weeding were done.

*Harvesting.*—Harvesting was done on 25-2-1936.



•

*Comparison of :*

•





*Green Manuring Experiment on Wheat.*

*Object.*—To find out whether green manuring is profitable in case of Wheat in the Mahratwada tract.

*Treatment and Lay-out.*—The two treatments of neat after sunn-hemp and wheat only were replicated 4 times by A B B A student's method.

*Preparatory Tillage.*—One ploughing was given to all the beds after the harvest of previous crops, 5 harrowings to beds of Wheat only and 3 harrowings to beds of Wheat and sunn hemp.

*Manuring.*—Only ten beds were sown with sunn-hemp on 13-9-36 Fasli (18-6-1936) and buried on 5-8-1936.

*Sowing, etc.*—Bansi local wheat was sown by seed drill 15" apart at the rate of 50 lbs. per acre on 7-10-1936.

*Interculture.*—One weeding and six hand hoeings were given till harvest.

*Harvesting.*—It was harvested on 3-2-1937.

[Statement.

A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
475	376	571	744	736	514	659	671	790	573	545	873	589	477	545	1,171	885	541	833	855

System of replication :— $2 \times 10$  student's (A B B A) method.  
 Area of each plot :—1.24 Acre ( $15 \times 121$ ).  
 Treatment :—Medium black cotton soil.  
 Basal manuring :—Burying of Sunn-hemp in A plot only (at 60 lbs. seed per acre).  
 Nil.  
 Date of application of manure :—Sunn-hemp buried on 5-8-1936.  
 Seed sown :—7-10-1936.  
 Harvested :—3-2-1937.  
 Previous crop :—Cotton.

## SUMMARY OF RESULTS.

MEAN YIELDS IN LBS.		Difference in mean Standard error	P.	Wheat effect of treatment testable 195
A	B			
773.1	563.4	209.7	50.0	

## VII.—NON-EXPERIMENTAL CROPS.

The following statements show the outturn per acre, methods of sowing, and area under each crop during the year under report:—

1. *Cotton*.—There were 10 varieties of cotton which were handed over to the farm by the Cotton Research Botanist for propagation. 48½ acres were dibbled 18" apart in rows and 9" between plants at the rate of 8 to 10 lbs. per acre. Yields were as follows:—

Serial No.	Name of variety	Area in acres	Yield of seed cotton in lbs.	Average yield per acre in lbs.
1	Parbhani American No. 1 .. ..	3½	2,542	782
2	Gaorani 4 B. .. ..	9½	5,435	572
3	Gaorani 6 .. ..	25¼	13,134	520
4	Gaorani 3 B 1 .. ..	1¾	888	507
5	Gaorani 4 B 5 .. ..	1½	891	594
6	Gaorani 12 F. .. ..	2¾	1,480	538
7	Gaorani 58 E. .. ..	½	307	614
8	Gaorani 1 A. .. ..	1½	750	500
9	Parbhani 26 H. .. ..	2	818	409
10	Havari 3 .. ..	½	226	452

2. *Groundnut*.—There were two varieties of groundnut for propagation. 43½ acres in all were drilled in rows 12" apart at the rate of 60 lbs. seed per acre. Outturn of pods were as follows:—

Serial No.	Name of variety	Area in acres	Yield in lbs.	Average yield per acre
1	Spanish peanut .. ..	33	38,466	1,166
2	Ranchi (Kanki No. 17) .. ..	19	24,036	1,265

3. *Kharif Jowar*.—8 acres were drilled with S. Jowar for seed 15" apart between rows. Seed rate 10 lbs. per acre. The outturn obtained was as follows:

Variety	Area in acres	YIELD IN LBS.		AVERAGE ACRE	
		Grain	Fodder	Grain	F
Saoner .. ..	8	4,345	27,688	523	

There was severe attack of Striga and Stem-borer

4. *Sugarcane*.—One acre and 15 ghuntas (1½) were planted with Sugarcane for propagation. There were 4 varieties. The outturn of cane obtained was as follows:—

Serial No.	Variety	Area in acres	Weight of cane in pounds	Weight of cane per acre
1	C.O. 290 .. ..	27/40	37,614	5
2	P.O.J. 2878 .. ..	17/30	35,893	6
3	E. K. 28 .. ..	1/15	6,492	9
4	Local .. ..	1/15	4,176	6

5. *Rabi Jowar*.—Two varieties were sown on an area of 41 acres with a drill 15" apart between rows. Seed rate 10 lbs. per acre. The outturns obtained are tabulated in the following statement:—

Variety	Area in acres	YIELD IN LBS.		AVERAGE ACRE	
		Grain	Fodder	Grain	F
Dagadi .. ..	33	23,122	1,16,529	701	
Maldandi .. ..	8	8,423	36,166	1,053	

*Wheat.*—Pusa No. 4 wheat was sown on an area acres for seed with seed drill 15" apart between

The seed rate was 50 lbs. per acre. Outturn was lows:—

Variety	Area in acres	YIELDS IN LBS.		AVERAGE PER ACRE	
		Grain	Straw	Grain	Straw
.. ..	7½	4,803	..	641	..

*Gram.*—4 acres of local gram was sown by drill upart at 40 lbs. per acre and yielded 1616 lbs. of giving an average of 404 lbs. per acre.

*Fodder Crops.*—Outturn of different fodder :—

Name of crop			Area in acres	Yields in lbs.	Average per acre
Imphi Jowar	..	..	½	13,320	26,640
Guinea-grass	..	..	¾	58,749	1,56,664
Bund grass	..	..	..	2,27,600	..

Imphi jowar was sown by two coultered drills on ½ n block A.

Guinea-grass was along the water channel. Bund was along the bunds and drains throughout the

*Bajra.*—1½ acres of African Bajra (Jamnagar ) were sown with seed drill 24" apart between at 21 lbs. per acre giving an yield of 772 lbs. of giving an average of 514 lbs. per acre, and 4002 lbs. Idler with an average of 2668 lbs. per acre. The st length of the ear-head was 28" and the smallest 18", comparing this with the last year's the length een considerably reduced, which affected this year's

## VIII.—PEST AND DISEASES.

1. *Stem-borer (Chylo Symplex)*.—It was noticed most in Kharif jowar, sugarcane, and to a slight extent in Rabi jowar. The dead hearts were picked and burnt.

2. *Tikka Disease*.—It appeared in Groundnut but no harm was done.

3. *Rats and Rabbits*.—There was severe attack of rats on sugarcane, of rabbits on wheat.

4. *Wilt Disease*.—There was a slight attack on cotton plots. All the wilted plants were picked and burnt.

5. *Boll-worm*.—There were less attacks of cotton boll worms (spotted and pink) than the previous year, most probably due to early ripening of the crop.

## IX.—IMPROVEMENTS.

The course of the Pinglegarh Nala which was running alongside the farm was diverted to save the washing of the farm area. Culverts on the drains and nala were constructed.

## X.—COMPOST.

There are 30 rectangular compost pits on the farm for the manufacture of manure. All the farm refuse was made use of. During the year under report, 481 cart loads were used for the farm and garden.  
(A5/1250 D/21-11-38)

(Sd.) S. M. ISHAQ.

DEPUTY DIRECTOR OF AGRICULTURE,  
Godavari Division

gthly rainfall, number of rainy days, mean temperatures and average of rainfall and number of days for the last 28 years on the Government Main Experimental Farm Parbhani-Deccan for the year 1345-1346 Fush (1936-37 A.D.)

Fortnight ending	RAINFALL		No. OF RAINY DAYS		FORTNIGHTLY MEAN TEMPERATURE		Remarks
	1936-37	28 years	1936-37	28 years	Max. temp.	Min. temp.	
June 1936 ..	6.09	2.12	7	4	93.5	75.2	Total rainfall for 1936-37. 32. 88
July 1936 ..	3.30	4.20	9	6	90.4	73.06	
do ..	1.39	3.28	7	7	90.8	73.36	Average for 28 years of rainfall is 34.6"
August 1936 ..	1.81	4.51	10	8	87.5	72.62	
do ..	2.99	2.32	8	7	86.66	76.3	
September 1936	2.60	3.45	4	7	86.6	71.16	
do ..	0.49	5.39	5	7	88.16	71.16	
October 1936	1.93	3.70	3	7	89.33	69.56	
do ..	0.0	1.24	..	3	91.96	61.4	
November 1936	0.06	0.59	1	1	87.46	61.3	
do ..	8.40	0.81	9	1	81.6	68.63	
December 1936	0.33	0.22	1	1	81.78	55.6	
do ..	0.0	0.13	..	1	82.36	53.93	
January 1937	0.44	0.15	1	..	80.6	49.1	
do ..	0.0	0.18	..	1	81.86	45.46	
February 1936	0.0	0.17	..	1	88.0	55.73	
do ..	0.11	0.34	2	1	88.4	58.26	
March 1937	0.0	0.02	..	..	91.86	62.13	
do ..	0.0	0.31	..	1	96.16	63.46	
April 1937 ..	0.64	0.31	5	..	95.56	67.5	
do ..	0.30	0.10	3	1	98.26	66.99	
May 1937 ..	1.86	0.10	2	1	98.33	71.73	
do ..	0.0	0.11	..	1	106.4	75.68	
June 1937 ..	0.14	0.56	2	1	108.03	80.4	



*Programme of Experimental Work, Government  
Farm, Parbhani for the year 1346 F.*

1937-38 A.D.

VARIETAL TEST.

(1) *Cotton Varietal Test No. 1.*

*Object.*—This experiment is designed to compare improved strains of Hyderabad Gaorani evolved by Cotton Research Botanist, Parbhani, with Gaorani Local.

Varieties:—Five Varieties, viz.—

- (1) Gaorani Local.
- (2) Gaorani 3-B. 1.
- (3) Gaorani 4-B. 5.
- (4) Gaorani 6.
- (5) Gaorani 113.

Replications 10. Fisher's randomised block method.

*Note:*—This experiment will be repeated on different sites on the farm.

(2) *Cotton Varietal Test No. 2.*

*Object.*—To determine a strain which would compare favourably with the mixture at present grown in Parbhani and Aurangabad districts.

Varieties:—Five Varieties, viz.—

- (1) Parbhani Local.
- (2) Gaorani 3-B. 1.
- (3) Gaorani 12-F.
- (4) Gaorani 113.
- (5) Havari. 3.

With ten replications on Fisher's randomised method.

(3) *Groundnut Varietal Test.*

*Object.*—To find a most suitable variety of ground-  
for Godavari Division.

Varieties:—5, viz.,

- (1) Big Japan.
- (2) Akola 10.
- (3) Ranchi.
- (4) Spanish peanut.
- (5) Local.

Replications 10 on Fisher's randomised block method.

(4) *Tur Varietal Test.*

*Object.*—To find out a most suitable variety of Tur  
for Godavari Division.

Varieties Five, viz.—

- (1) R. T. 15.
- (2) R. T. 51.
- (3) R. T. 24.
- (4) R. T. 80.
- (5) Local.

Replications 8, on randomised block method.

(5) *Mung Varietal Test.*

*Object.*—To find out a most suitable variety of Mung  
for Godavari Division.

Varieties Five, viz.—

- (1) M. T. 23.
- (2) M. T. 28.
- (3) M. T. 18.
- (4) M. T. 36.
- (5) Local.

Replications 8 on randomised block method.

(6) *Kharif Jowar yield test for Grain and Kadbi.*

*Object.*—To determine the comparative worth of four improved strains of the Economic Botanist and the Local Kharif jowars.

Varieties:—Six, viz.—

- (1) Ramkhel 1586.
- (2) Ramkhel 1601.
- (3) Saoner 1542.
- (4) Saoner 1616.
- (5) Local Nanded White.
- (6) Local Nanded Yellow.

Fisher's randomised blocks with 12 replications.

(7) *Comparative Yield Test of Wheat Varieties.*

*Object.*—To determine the relative worth (grain production) of 7 improved strains of the Economic Botanist and Pusa 4, Cawnpore 13-A and Local wheat.

Varieties 10, viz.—

- (1) Aurangabad 460-B-1.
- (2) Bidar 489-B-12.
- (3) Cawnpore 13-A.
- (4) C. P. 137-7.
- (5) Osmanabad 23-10.
- (6) Osmanabad 85-6.
- (7) Osmanabad 119-4.
- (8) Parbhani 130-4.
- (9) Pusa 4.
- (10) Local Wheat.

Replications 10. Fisher's randomised blocks.

(8) *Comparative Yield Test of Rabi Jowars.*

*Object.*—To determine the relative worth of 4 improved strains of Rabi jowar of the Economic Botanist with Local Dagadi.

Varieties Five, viz.—

- (1) Dagadi 803.
- (2) Dagadi 809.
- (3) Hyderabad 32.
- (4) Hyderabad 47.
- (5) Local Dagadi.

Replications 10. Fisher's randomised blocks.

(9) *Gram Varietal Test.*

*Object.*—To find out a most suitable variety of Gram for Godavari Division.

Varieties Five, viz.—

- (1) Gwalior.
- (2) Sabour.
- (3) G. 58.
- (4) G. 17.
- (5) Local.

Replications 10. Fisher's randomised blocks.

(10) *Linseed Varietal Test.*

*Object.*—To find a most suitable variety of Linseed for Godavari Division.

Varieties Five, viz.—

- (1) Panch Kochi.
- (2) C. P.
- (3) C. P. 30.
- (4) Poona.
- (5) Local.

Replications 10. Fisher's randomised blocks.

(11) *Sugarcane Varietal Test.*

*Object.*—To find out a most suitable variety for Godavari Division.

Varieties Six, viz.—

- (1) C. O. 290.
- (2) C. O. 213.
- (3) C. O. 223.
- (4) P. O. J. 2878.
- (5) E. K. 28.
- (6) Local.

Replications 10. Fisher's randomised block method.

(12) *Seed Rate Experiment of Groundnut.*

*Object.*—To determine the most suitable seed rate of Groundnut (Spanish peanut) for the Godavari Division.

Treatments Four, viz.—

- (1) 30 lbs. per acre.
- (2) 40 -do-
- (3) 60 -do-
- (4) 80 -do-

Replications 8 on Fisher's randomised block method.

(13) *Rotational Experiments No. 1.*

*Object.*—To find out the relative worth of a three years rotation, viz., (1) Kharif jowar, (2) Groundnut and (3) cotton, against the Local, 2 years, rotation of Kharif jowar and Cotton.

Local rotation on Students A. B. B. A. method and the 3 year rotation on randomised block method.

Replications 10.

(14) *Rotational Experiments No. 2.*

*Object.*—Same as rotational experiment No. 1, but with Rabi jowar.

Local rotation on students A. B. B. A. method and 3 years rotation replications 10 on randomised blocks.

5) *Green Manuring Experiment of Wheat.*

*ect.*—To find out whether green manuring is profitable case of wheat crop in Godavari Division.

lications 10, on students A. B. B. A. method.

(16) *Cotton Manurial Trial.*

*ect.*—To find out a most suitable manurial treatment for cotton in Godavari Division.

- (1) Local 5 Cart-loads of Farm Yard Manure.
- (2) 30 lbs. of Nitrogen as Farm Yard Manure.
- (3) 15 lbs. of Nitrogen as Farm Yard Manure  
+ 15 lbs. as Nicifos.
- (4) 15 lbs. of Nitrogen as Farm Yard Manure  
+ 15 lbs. Groundnut Cake.

True copy.

# ANNUAL REPORT OF THE MAIN EXPERIMENTAL FARM, RAICHUR, FOR THE YEAR 1945-46 F.

## I. INTRODUCTION.

This report deals with the activities of the Main Experimental Farm, Raichur, during the Fifth year of its stence. The first three years (1932-33, 1933-34, and 34-35) were utilized for bringing the land into proper condition for experimental work and for carrying out soil uniformity tests. This is only the second year of experimental work.

## II. SITUATION.

The Farm is situated at a distance of  $2\frac{1}{2}$  miles from Raichur town on Raichur-Lingsugur Road and  $1\frac{1}{2}$  miles from the Raichur Railway Station by cart track. Two villages, Askihal and Rampur are situated adjacent to its Northern and Southern boundaries respectively.

The Longitude is  $77^{\circ} 24' 37''$ , East and the Latitude is  $16^{\circ} 12' 12''$  North. The Altitude is 1278' (above the mean sea-level).

## III. OBJECT.

This Farm is the Main Experimental Farm intended for the study of Agricultural Problems of the Karnatak Division of H.E.H. The Nizam's Dominions.

## IV. SOILS.

The site of the Farm has been particularly selected to have two distinct types of representative soils which it contains. The Northern portion of the Farm has deep black soil representative to some extent of Western Karnatak, given mainly to Rabi crops while the Southern portion of the Farm consists of high-lying red soils representative to some extent of the Eastern Karnatak, on which Kharif crops are generally cultivated.

The depth of the Black soil varies from 3' to 10' whereas the depth of the Red soil varies from 6" to 3" with substratum of murum mixed with pieces of stone and lime nodules.

## V. AREA.

The area of the Farm is about 120 acres; out of this Office, Quarters, Implements and other sheds, Garden, Roads and Grazing area altogether occupy about 33 acres, the balance of 87 acres is used for cultivation. From this again 40 acres are given to the Dry Farming Research Scheme, and 7 acres will be given every year to the Cotton Research Botanist for the Kumpta Scheme. The remaining 40 acres are utilized by the Main Farm for Experimental work in consultation with the Cotton Research Botanist and Economic Botanist, and also for propagation of improved varieties of crops for distribution.

## VI. SOURCE OF IRRIGATION.

This being a Dry Farm there is no provision for large quantities of water for irrigation. There are two wells on the Farm one of which supplies irrigation water to the Horticultural Section. The water of the other well is utilized for drinking purposes.

## VII. SEASON.

(a) *Kharif*.—The Kharif season commenced with a good premonsoonic showers of 0.91" on the 1st of April 1936, and this helped the preparatory cultivation of the Kharif Red soils. The South-West monsoon started well in the month of June and gave a rainfall of about 5" in the first month. Sowings commenced in the last week of June. Germination was satisfactory as it was helped by light drizzles that followed. In spite of sub-normal rains in the months of July and August amounting collectively to very nearly 4½", the crops progressed very well, till the middle of August. Then followed a long spell of drought of 25 days. This gave a severe set back to the shallow rooted standing Kharif crops. Kharif cotton however was not much affected



on account of its deep root system. On the 28th of September 1936, there was a good shower of 1. 15", but this could not help the Kharif crops especially Jowar and Groundnuts to revive, as by that time they were completely drought stricken. On the whole Kharif season was unsatisfactory as compared to the previous three years.

(b) *Rabi*.—The rains received in June were helpful in carrying out preparatory tillage operations, in the Black soils. The failure of rains in the succeeding three months considerably reduced the soil moisture so much so that the Rabi lands in spite of the aforesaid rainfall of 1. 15" on the 28th September, did not attain a state of optimum moisture capacity before the sowings were undertaken. Cotton and Jowar sowings were finished by the 2nd week of October. Germination was again satisfactory. There were light but useful showers in October and November and these helped the growing crops which fared well till the end of December. Complete absence of rain in the month of December and the following January retarded the growth of plants and grain formation was considerably interfered with. February and March did receive nearly 3" of rain but it was of no use as most of the Rabi crops were harvested by that time.

Summing up the whole, though the total rainfall received during the year under report was about 19" or nearly  $\frac{3}{4}$  of the normal, it was unevenly distributed consequently it caused a partial failure of crops.

## VIII. EXPERIMENTS.

Detailed information regarding results of each of the experiments carried out by the Main Farm during the year under report is given in the Appendices.

The following however is the general information regarding the experimental work of the year.

### KHARIF CROPS.

#### (1) *Comparison of Kharif Jowar Varieties.*

*Object*:—Five varieties of Jowar were grown to find out the most profitable one.

*Preparatory Tillage*:—Two ploughings with the Victory plough, three harrowings with blade harrow and one discing were given.

*Plotting*:—40 plots of  $\frac{1}{40}$ th acre were laid out to allow 8 replications.

*Manuring*:—Farm Yard Manure at the rate of 5 cart-loads per acre was applied before sowing. (One cart-load = 1000 lbs.)

*Sowing*:—Seed was sown on the 20th of Amardad 1345 F. (25th June 1936).

As germination of some of the varieties was bad no results could be obtained.

## (2) *Comparison of Groundnut varieties.*

*Object*:—Five varieties of Groundnuts were grown to find out the most profitable one, suitable for the Karnatak Division.

*Soil*:—Red Soil.

*Preparatory Tillage*:—The land was given two ploughings with a Victory plough, was harrowed three times and disced once.

*Plotting*:—40 plots of  $\frac{1}{40}$ th of acre were made to allow 8 randomised replications.

*Manuring*:—Five carts of Farm Yard Manure were applied per acre.

*Sowing*:—Sowing was done by dibbling the seed keeping distances of 6" between plants in the row and 12" between the rows, on 19th Amardad 1345 Fasli (24th June 1936).

*Weeding and Interculture*:—Three hoeings and two hand weedings were done.

*Harvesting*:—All varieties were harvested on 23rd Azur 1346 F. (29th October 1936).

*Yields*:—Yields when statistically worked out gave the following results:—

H. G. 1, 845 lbs.

Kanki No. 17. 835 lbs.

Spanish Peanut No. 5. 825 lbs.

Spanish Peanut No. 9. 814 lbs.

Local. 470 lbs. per acre.

(Please refer to appendix No. 2).

### (3) *Comparison of Bajra Varieties.*

*Object:*—Five varieties of Bajra were grown to find out the most profitable variety suitable for the Karnatak Division.

*Soil:*—Red Soil.

*Preparatory Tillage:*—Consisted of ploughing with Victory plough twice, harrowing with blade harrow thrice and one discing.

*Plotting:*—35 plots  $1/40$ th acre in area were made to allow 7 randomised replications.

*Manuring:*—Farm Yard Manure at the rate of 5 carts per acre was applied.

*Sowing:*—Sowing was done on 21st Amardad 1345 F. (26th June 1936), keeping a space of 12" between the rows. Thinning was done to have a space of 6" between plants in the row.

*Weeding and Interculturing:*—Two hoeings and one hand weeding were given.

*Harvesting:*—Harvesting was done on the 4th Azar 1346 F. (9th October 1936).

*Yields:*—Yields when statistically worked out showed that the Cawnpore Awned and the Cawnpore Awnless and Akola varieties yield significantly higher outturns than Local and Jannagar Giant. (Please refer to appendix No. 3 and 4).

### (4) *Comparison of Tur Varieties.*

*Object:*—Five varieties of Tur were grown to find out the most profitable one and suitable for the Karnatak tract.

*Soil:*—Red Soil.

*Preparatory Tillage:*—Ploughing was done twice with the Victory plough, followed by three harrowings with the blade harrow and one clod crushing with disc harrow.

*Plotting.*—35 plots  $1/40$ th acre in area were made to allow 7 randomised replications.

*Manuring:*—Farm Yard Manure was given at the rate of 5 carts per acre.

*Sowing*.—Seed was dibbled on 21st Amardad 1345 F. (26th June 1936.)

*Weeding and Interculturing*.—Three hoeings and two hand weedings were given.

*Harvesting*.—Harvesting was done on 16th Isfandar 1346 F. (18th January 1937).

*Yields*.—Yields when worked out statistically indicated that Coimbatore, Local, Unao early are significantly higher in yield than Pucka Red and Pusa E varieties. (Please refer appendix No. 5).

#### (5) *Comparison of Kharif Cotton Varieties.*

*Object*.—Four improved Gaorani varieties of the Cotton Research Botanist were compared with the Local Kharif variety to find out the most profitable one.

*Soil*.—Red soil

*Preparatory Tillage*.—Two ploughing with the Victory plough, three harrowings with the blade harrow and one discing constituted the preparatory tillage.

*Plotting*.—30 plots  $1/40$ th acre in area were made to allow 6 replications.

*Manuring*.—Farm Yard Manure at the rate of 5 carts per acre was applied before sowing.

*Sowing*.—Sowing was done by dibbling the seed 9" between plants in the rows that were 18" apart, on 20th Amardad 1345 F. (25th June 1936).

*Weeding and Interculturing*.—Three hoeings and two hand weedings were in all given.

*Harvesting*.—Pickings commenced on the 10th of Azur 1346 F. (15th October 1936), and were completed by 12th of Dai 1346 F. (17th November 1936).

*Yields*.—Yields when analysed statistically indicated that the Local variety gave significantly higher yields than others.

## RABI CROPS.

(1) *Comparison of Rabi Cotton Varieties.*

**Object:**—8 varieties of Rabi Cotton including five promising types of Raichur Kumpta of the Cotton Research Botanist, were grown to find out most profitable variety suitable for the tract.

**Soil:**—Black soil.

**Preparatory Tillage:**—one deep ploughing and four harrowings with the blade harrow constituted the preparatory tillage.

**Plotting.**—64 plots 1/80th acre in area were made so as to allow 8 randomised replications.

**Manuring:**—Nil

**Sowing:**—Seeds of the various varieties were dibbled keeping the distance of 18" between the rows and 18" between plants in the same rows, on 25th Aban 1345 (30th September 1936).

**Weeding and Interculture:**—Interculturing was done four times with Planet Junior hand hoe.

**Harvesting.**—Pickings commenced on 15th Farvardin 46 F. (16th February 1937), and continued till 16th Ardibehisht 46 F. (20th March 1937).

**Yields:**—Results of the yields were statistically analysed and were found to be not significant statistically. (please refer to appendix No. VI).

(2) *Comparison of Spacings for Rabi Cotton.*

**Object:**—Five different spacings between the plants in the rows (keeping the distance between the rows constant at 18"), were tried on the Rabi Cotton to find out the most suitable spacing.

**Soil:**—Black soil.

**Preparatory Tillage:**—Consisted of one deep ploughing and five harrowings with the blade harrow.

**Plotting:**—20 plots each 1/40th acre in area were laid out so as to allow four randomised replications.

*ing*:—Nil.

*r*:—Seed of Jayawant cotton was dibbled on 1345 F. (2nd October 1936).

*ig and Interculture*:—Four interculturings and hoe were given.

*sting*:—First picking was started on 29th 1346 F. (2nd March 1937), and the third and g was done on 14th Ardibehisht 1346 F. (18th 17).

:—Yields when worked out statistically showy were not significant. (Please refer to appen-

#### *mparison of Wheat Varieties.*

:—9 varieties including 7 varieties from the Botanist, Pusa 4 and Local were grown to find ost profitable one.

-Black soil.

*tatory Tillage*:—One deep ploughing followed urrowings with the blade harrow made up the ry tillage.

*ing*:—Farm yard Manure was applied at the arts per acre.

*g*.—90 plots 1/120th acre in area were made randomised replications.

*y*.—Seed was dibbled by hand on 27th Azur 46 vember 1936).

*ig and Interculture*:—One hand weeding and gs with Planet Junior hand hoe.

*sting*.—Harvesting was done on 8th Farwardi 9th November 1937).

:—Yield results were statistically analysed een to indicate that the Raichur Local, Os 27/10 /A2, Os 72/4 are significantly higher in yield est. (Please refer to appendix No. 8).

### *Comparison of Gram Varieties.*

*Object:*—Five different varieties of Gram were grown to find out the most profitable variety.

*Soil:*—Black soil.

*Preparatory Tillage:*—Consisted of one deep ploughing followed by four harrowings.

*Manuring:*—Farm yard Manure was applied at a rate of 5 carts per acre.

*Plotting.*—15 plots  $1/20$  acre in area were laid out giving 3 randomised replications.

*Sowing.*—Seed was dibbled by hand on 30th October 1936 F. (4th November 1936.)

*Weeding and Interculture:*—One hand weeding and three hoeings were given.

*Harvesting.*—Harvesting was done on 12th February 1937 F. (13th February 1937).

*Yields:*—Yields were not statistically significant. Local Parbhani and Gwalior varieties are high yielding. Sabour and G 28. (Please refer to appendix No. 1.)

### IX. NON-EXPERIMENTAL CROPS.

After leaving out a total area of about  $30\frac{1}{2}$  acres for the experiments of the Main Farm and the Dry Farm Research Scheme,  $38\frac{1}{2}$  acres were cultivated by the Main Farm and 8 acres by the Dry Farming Section for experimental crops during the year.

The following statement shows the details of experimental crops grown by the Main Farm during the year.

Serial No.	Name of crop	AREA		ACTUAL OUTTURN IN LBS.		
		Ac.	Gts.	Grain	Bhusa	Fodder
1	Groundnut ..	3	..	1,504	5,500	..
2	Jowar ..	16	10	4,890	1,513	38,895
3	Bajra ..	1	..	747	..	1,580
4	Gram ..	..	30	102	178	..
5	Kulthi ..	1	..	345	1,100	..
6	Cotton ..	16	25	4,101	..	..

## X. PERMANENT IMPROVEMENTS.

Finishing touch was given to the lay-out of the Farm. Levelling was done in four acres to the North of the Farm; some levelling work still remains to be completed.

## XI. CHARGE AND ESTABLISHMENT.

Dr. Amir Ali remained in charge as Superintendent throughout the year except for a short period when he was on privilege leave of 16 days. The post of the Assistant Superintendent remained vacant during the year. Mr. B. S. Venugopal Rao, probationer, joined duty at the Farm on 7th Dai 1346 F.

The Superintendent and the staff of the farm carried out their respective duties well.

## XII. VISITS.

The following are the most notable among the visitors to the Farm during the year:—

Raja Rajayan Maharaja Sir Kishen Pershad Bahadur, President of the Executive Council.

Nawab Rais Jung Bahadur, Secretary, Commerce and Industries.

Mr. R. M. Crofton, Secretary, Revenue Department.

Mr. Syed Mohammad Mehdi, Secretary, Executive Council.

Sir John Russell, Director of the Rothamstead Experimental Station.

(Sd.) H. B. RAJDEV,

DEPUTY DIRECTOR OF AGRICULTURE,

*Karnatak Division.*



APPENDIX No. I.  
Statement showing Daily Rainfall in Cents during 1345-4

Date	Amar- dad 45 F.	Sheh- rewar	Meher	Aban	Azur 46 F.	Dai	Bah- man	Isfan- dar	Far- wardi
1	38	..	..	..	..	..	..	..	..
2	18	..	..	..	..	..	..	..	..
3	10	..	4	..	..	1	..	..	..
4	2	87	..	..	..	1	..	..	..
5	25	..	2	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..
7	..	3	..	..	..	10	..	..	..
8	..	..	36	..	..	..	..	..	..
9	..	..	2	..	..	62	..	..	..
10	..	..	..	..	..	23	..	..	..
11	..	..	42	39	..	..	..	..	..
12	..	8	38	2	..	..	..	..	..
13	..	24	..	..	..	..	..	..	..
14	..	..	..	2	..	..	..	..	1
15	196	..	..	..	..	..	..	..	1
16	145	90	..	16	..	..	..	..	1
17	35	20	..	..	..	..	..	..	21
18	..	..	..	20	..	..	..	..	..
19	..	1	..	14	..	..	..	..	..
20	..	..	..	7	..	..	..	..	187
21	14	..	..	11	..	..	..	..	..
22	2	..	..	..	..	..	..	..	..
23	6	..	8	115	..	..	..	..	..
24	..	7	5	..	4	..	..	..	..
25	..	..	..	..	46	..	..	..	..
26	..	..	..	25	..	..	..	..	..
27	..	25	..	..	..	..	..	..	..
28	16	..	..	85	..	..	..	..	..
29	16	..	..	..	..	..	..	..	..
30	..	..	3	..	..	..	..	..	..
31	..	1	..	..	..	..	..	..	..
Total	523	269	144	342	50	97	..	..	211

Total for the year 1908"

*Field Record and Analysis*

*Object of experiment*

*Names of varieties*

*Details of cultivation*







Programme of Experimental work on the Government  
Main Farm, Raichur, 1346-47 F.

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(I) The following experiments will be conducted during the Kharif season.

- (1) Comparison of Kharif Jowar Varieties.
- (2) Comparison of Groundnut Varieties.
- (3) Comparison of Cotton Varieties.
- (4) Comparison of Bajra Varieties.
- (5) Single Plant Selection of Kharif Cotton (by the Cotton Research Botanist).
- (6) Pedigree Cultures and Selection in Castor crop (by the Economic Botanist).

(II) During the Rabi season, the following experiments will be carried out.

- (1) Rabi Cotton Varietal Trials.
- (2) Rabi Cotton Spacing Trials.
- (3) Strain Test of Rabi Cotton (by the Cotton Research Botanist).
- (4) American Cotton strain test (by the Cotton Research Botanist).
- (5) Single plant selection from village samples of Rabi Cotton (by the Cotton Research Botanist).
- (6) Wheat Varietal Trials (by the Economic Botanist).
- (7) Gram Varietal Trial.

(III) *Propagation*.—Propagation of seeds, meant for Distribution such as Ground nuts, Cottons, Jayawant and Hagari will be taken up.

H. B. RAJDEV,  
*Dy. Director of Agriculture.*

18-12-46 F.